(Re)creating the world in everyday engagements: a material approach to elements and cosmologies during the Mesolithic-Neolithic transition.

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# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents</td>
<td>2</td>
</tr>
<tr>
<td>List of Figures</td>
<td>7</td>
</tr>
<tr>
<td>List of Tables</td>
<td>12</td>
</tr>
<tr>
<td>Abstract</td>
<td>13</td>
</tr>
<tr>
<td>Declaration and Copyright</td>
<td>14</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>15</td>
</tr>
<tr>
<td>Chapter 1: Introduction</td>
<td>16</td>
</tr>
<tr>
<td>1.1 Questions and Suggestions</td>
<td>19</td>
</tr>
<tr>
<td>1.2 A note on Analogy</td>
<td>25</td>
</tr>
<tr>
<td>Chapter 2: The Mesolithic – Neolithic transition in Britain: problems of definition</td>
<td>27</td>
</tr>
<tr>
<td>2.1 Evolution</td>
<td>28</td>
</tr>
<tr>
<td>2.2 Culture-history and an ‘epi-palaeolithic’</td>
<td>31</td>
</tr>
<tr>
<td>2.3 Environmental approaches</td>
<td>36</td>
</tr>
<tr>
<td>2.4 Climate Change</td>
<td>41</td>
</tr>
<tr>
<td>2.5 Population movements: ‘the Neolithic settlement of our Island’ (Case 1969, 176)</td>
<td>42</td>
</tr>
<tr>
<td>2.6 Models of Adoption</td>
<td>46</td>
</tr>
<tr>
<td>2.7 Unpacking the Neolithic</td>
<td>50</td>
</tr>
<tr>
<td>2.8 Mesolithic Misunderstandings</td>
<td>55</td>
</tr>
</tbody>
</table>
List of Figures

Figure 3.1 Top: Image of the cosmos from Scivas by Hildegarde of Bingen. Bottom: Illustration showing two versions of the egg model of the cosmos (after Simek 1996)

82

Figure 4.1 Distribution of woodland types in Scotland (after Tipping 1994; Warren 2005)

97

Figure 4.2 ‘Mesolithic activity adjacent to a silted up stream channel in a forest clearing’ Reconstruction of the Mesolithic woodland from data collected during excavations for Heathrow Terminal 5 in the middle Thames Valley (© Framework Archaeology based on Carruthers 2010)

99

Figure 4.3 Oak timber found in peat deposits at the Maerdy Wind farm site, Rhondda, Glamorgan with illustration highlighting carved areas that have survived. (© R. Scott Jones 2013)

102

Figure 4.4 Carved trees are found at Aboriginal bora sites and at the burial sites of important men. (Photographs taken in the early 1940s by Russell Black. Exhibited by the State Library of New South Wales 2011)

105

Figure 4.5 The parts of a tree are equated to parts of the human body within an Ayurvedic worldview (Frawley and Lad 1986, 17 in Reynolds 2010, 109)

112
Figure 4.6 A reconstruction drawing (top and middle) of the original Meare Heath bow based on the fragment recovered from the Somerset Levels (bottom). No scale provided by the artist but it is estimated the original bow would have been c. 1.9m in length. (M. Rouillard in Coles and Coles 1986, 79)

Figure 4.7 Traces of the modification of trees by Sami communities. Left; a handle carved in a living tree to provide a tether for animals. Right; wedges driven into a tree to hold milk vessels. (Östlund et al 2002, 54)

Figure 4.8 Splitting an Oak trunk using wooden wedges. (© Richard Darrah)

Figure 5.1 A smoke exorcism is performed to expel evil spirits (Bacigalupo 2007, 22 Fig. 2.2)

Figure 5.2 Plan of excavated features at March Hill Carr showing the position of hearths one to four and lithic find spots. (After Spikins 2010, 5)

Figure 5.3 Plan of excavated features at March Hill Carr showing lithic refit patterns. (After Spikins et al 2002, 1238)

Figure 5.4 Diagram showing a range of methods for heating flint: (A) deep pit with earth buffering the flint pieces from the surrounding embers, (B) small flint pieces dropped directly into cooling embers and ashes, (C) small flint pieces buried in a shallow pit immediately below a small fire. (after Mercieca and Hiscock 2008, 2637 Fig. 3)
Figure 5.5 Burnt pieces of flint from, (L) a Mesolithic and, (R) a Neolithic context (Portable Antiquities Scheme. (L) LVPL-EAB476 and (R) SUSS-E3E865)

Figure 5.6 Location of Oronsay and shell midden sites.

Figure 5.7 Plan of excavations at Cnoc Coig, Oronsay showing identified structures and hearths from all phases (combines data from Mellars 1987, 234; Meiklejohn et al 2005, 90).

Figure 5.8 Plan of Cnoc Coig midden showing excavated areas, hearth features and recording 'lanes' 5 and I (after Nolan 1986). Nolan created nominal lanes of 1m wide when analysing the data from Cnoc Coig. The resulting plots displayed all finds within the width of each lane in one vertical view

Figure 5.9 Plots of hearths and selected finds from 'lanes' 5 (A) and I (B) at Cnoc Coig. The section of lane 5 (A) shows the hearth from the structure of phase one while lane I (B) shows the hearth from the structure of phase three. (Constructed from images in Nolan 1986).

Figure 5.10 Two of the stone clusters recorded at the base of midden deposits (c. 0.2m in diameter). Each featured between 15 and 20 heat-fractured beach pebbles. (Mellars 1987, 237, Fig. 14.22)

Figure 7.1 Plan and section of pit A at Hermitage, Co Limerick. (after Collins and Coyne 2003)

Figure 7.2 Burnt axe recovered from pit A at Hermitage (Collins and Coyne 2003)
Figure 7.3. Plan of wooden posts that form the earliest phases of activity at Haddenham, Cambridgeshire, including the three large posts made of split oak trunks, the façade and two cremation deposits. (after Reynolds 2010, 125; Evans and Hodder 2006, 100)

Figure 8.1 Overall plan of Ascott-under-Wychwood long barrow (Benson and Whittle 2007, Fig. 1.6)

Figure 8.2 Preferred model for the chronological sequence at Ascott-under-Wychwood (Bayliss et al 2007a, Fig. 3)

Figure 8.3 Distribution of dates relating to the Neolithic pre-barrow occupation (Bayliss et al 2007a, Fig. 5)

Figure 8.4 Length in calendar years of different phases of construction, use and absence (Bayliss et al 2007, Fig. 9)

Figure 8.5 Plan of pre-barrow Mesolithic flints, post-hole feature F 16 and tree-throw F11. (after McFadyen et al 2007, 26-36).

Figure 8.6 Plan of Neolithic pre-barrow features with the location of tree-throw F11 and post-hole F16 indicated (After McFadyen et al 2007, Figs 2.2; 2.3).

Figure 8.7 Plan of Neolithic pre-barrow structures (McFadyen et al 2007, 27).

Figure 9.1 Aerial view of Warren Field, Crathes, showing the Mesolithic pit alignment (A) and the early Neolithic timber structure
(B), taken in 1976. (© Royal Commission on the Ancient and Historic Monuments of Scotland. Image KC 632)

Figure 9.2 Location of the Warren Field site in relation to the River Dee, Burn of Coy, Balbridie Timber Hall and Mesolithic lithic scatters (after Gaffney et al 2013)

Figure 9.3 Plan of the section of the pit alignment revealed at Warren Field with section drawings of the excavated pits (after Murray and Murray 2009, Fig. 3.)

Figure 9.4 Sections of pits 6, 22, 18 and 19 from the pit alignment at Warren Field, Crathes (after Murray and Murray 2009, 8, Fig. 4)


Figure 9.6 Plan of the timber structure at Warren Field, Crathes showing primary and secondary posts, two axial pits and fire hotspots (after Murray et al 2009).

Figure 9.7 Probability distributions for the dates of early Neolithic timber halls at Crathes (Warren Field), Claish, and Balbridie (Bayliss et al 2011, Fig. 14.174)

Figure 9.8 Burnt remains of a reconstructed Neolithic Hall at Archaeon, Netherlands. (1996)
### List of Tables

Table 2.1 The ‘growth of intelligence and progress of mankind’ as illustrated by the discoveries and inventions that mark beginning of successive phases (after Morgan 1877)  

Table 3.1 Characteristics of the four elements (after Simek 1996, 101)  

Table 9.1 Radiocarbon dates from the pit alignment at Warren Field, Crathes. (After Marshall 2009, 74)  

Table 9.2 Radiocarbon dates from the timber structure at Warren Field, Crathes. (combining data from Marshall 2009, 77; Bayliss et al 2011, 817-818)
Abstract

This thesis explores the development of material approaches in archaeology to discuss the relationship between material engagements in the world and cosmological schemes. In particular, the role of key materials in cosmologies is considered in light of ideas about elements and their fundamental role in the composition of the world. Three materials (wood, fire and water) are then considered in detail using anthropological illustrations to highlight the range of ways wood, fire and water are understood in traditional societies. Archaeological examples from the late Mesolithic and earliest Neolithic are examined in light of these ideas to suggest new possibilities for interpretations of the material remains discussed.

These discussions of materials and cosmologies are set against a background of the debates surrounding the transition to the Neolithic. In particular, recent challenges to perceptions of the Mesolithic are considered to highlight the problematic discourses that have traditionally dominated studies of the period. It is amongst these critical reappraisals that this thesis contributes to emerging narratives of lives in the Mesolithic. The use of wood, fire and water is examined in contexts of the late Mesolithic and earliest Neolithic and is suggested to show much continuity in the practices that used wood, fire and water. Similar properties were actively called upon in these continued practices however, their deployment in new contexts and practices is suggested to indicate a shift in the importance of certain properties or characteristics. The implications of this in relation to cosmological schemes suggests aspects of continuity such as connections between materials and the landscape but accompanied by a stronger emphasis on certain relationships and processes within the world such as the transformation of bodies and articulation of community.
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Chapter 1: Introduction

Cummings and Harris (2011) argue that discussions about the Mesolithic – Neolithic transition in Britain have become polarised between models of indigenous adoption and colonisation. While I disagree with their portrayal of archaeologists stubbornly clinging to either side of this dichotomy, their narrative highlights the extent to which the transition remains highly debated and poorly understood. This thesis seeks to contribute to these on-going discussions about the character of the transition by exploring the relationship between material engagements and cosmological schemes during the late Mesolithic and earliest Neolithic in Britain. The impetus behind this study lies in my Masters dissertation which explored wooden architecture in the Mesolithic and earliest Neolithic. The traditional research agendas of Mesolithic archaeologies that privilege questions of subsistence, economy and technology frustrated my attempts to bring together interpretations of late Mesolithic and early Neolithic engagements with trees and wood. It became apparent that a different approach was needed to explore interactions between people and materials.

This thesis predominantly draws on recent approaches to materials and materiality outlined by Ingold (2007; 2010) and Conneller (2011) but also on work by Jones (2012) and themes discussed in Alberti et al (2013). This involves considering the specific material and contextual details of interactions between people and materials (chapter three). Alongside this, the relationship between material interactions and cosmological beliefs is explored using insights from ethnographic studies and Anthropology. Interactions with, and experience of, materials are argued to be
understood through cosmological schemes and in turn (re)create those beliefs, (chapter three). Bringing these insights together I examine archaeological traces of interactions with materials in both the late Mesolithic and earliest Neolithic, and argue that it is possible to explore the complex ways in which materials were understood, and consider cosmological beliefs across this period.

Before describing in more detail how this thesis progresses I would like to outline some methodological choices. The geographical focus of this study is largely centred on the UK but includes archaeological examples from elsewhere in Europe. Likewise, whilst I have endeavoured to focus on archaeological examples from the late Mesolithic and earliest Neolithic only, discussion of earlier examples has in some cases been employed to explore interactions with materials more broadly, and histories of action at particular sites. The use of ethnographic accounts in these chapters is as a tool to open possibilities for interpretation. I discuss my use of ethnography below but note here that it is not used to provide direct models.

It has been necessary to take a broad approach to fully consider the topic in a meaningful manner and, as such, this thesis does not follow a traditional model involving the collection and analysis of data. This approach has, however, meant it was necessary to focus on only a few materials to enable a sufficiently detailed discussion. The choices of wood, fire and water relate to the role of elements in many cosmological schemes. Within these beliefs, the central role of key elemental materials in the construction and composition of the universe guides their use in the world and the way in which they are understood. Considering the way in which these
materials were used or treated may therefore inform about wider cosmologies in the late Mesolithic and earliest Neolithic of Britain. **Chapters four, five and six** explore possibilities for the way in which wood, fire and water were understood by communities around 4000 BC. These materials would have been prevalent in the lives of people around 4000 BC and may have been important, or central, within the cosmologies of communities at the time. These materials have also been less intensively discussed in archaeological literature than stone, which is more durable, and as such, more tangible today. As **chapters four, five and six** demonstrate however, understandings of wood, fire and water can also be explored through the detail of activities and interactions in which these materials were encountered.

The individual chapters on wood, fire and water explore the ways in which these materials can be conceptualised, using ethnographic analogy to open up new possibilities for the interpretation of the case studies presented. However, the divergence of this thesis from a traditional framework has particularly been driven by the desire to bring together discussions about these materials in broader case studies that explore the complexity of interactions in the material world. No material exists in isolation and I was aware of the need to avoid constraining materials in discrete categories. For this reason I have also included case studies (**chapters seven, eight and nine**) that explore the interweaving roles of materials within the world and cosmological schemes. It is in these chapters that this thesis takes a necessary non-essentialising approach to the interactions between people and materials. The final chapter (**nine**) uses a specific site case study, featuring both Mesolithic and Neolithic
archaeology, as a platform for further discussion that brings together the themes discussed in this thesis.

The following section outlines in more detail how this approach to materials is used within this thesis to contribute to debates about the Mesolithic – Neolithic transition in Britain.

1.1 Questions and Suggestions

Chapter two: The overview presented in this chapter outlines how shifting approaches and dominant paradigms in archaeology have impacted studies of the transition to the Neolithic in Britain. The chapter follows a chronological framework but also explores themes, questions and problems that have dominated discussions of this period. Particular attention is paid to the assumptions that have guided definitions of both the Mesolithic and Neolithic and their legacy in on-going discussions of the transition. Recent developments in the study of the late Mesolithic have, however, begun to produce new narratives and interpretations of the period (e.g. Milner and Woodman 2005; papers in Conneller and Warren 2006; Cobb 2007; Conneller 2010; Gray-Jones 2011; Taylor 2011) and it is amongst these critical reappraisals that this thesis contributes to emerging narratives of lives in the Mesolithic.

Chapter three: The specific material approach that this thesis applies has emerged from the debates reviewed in this chapter, which begin, and end, with questions about how we approach materials and materiality in archaeology. The move away from an
understanding of material culture as a static representation of past societies to approaches that consider an active role for artefacts has come with the development of interpretive archaeologies. Nonetheless this emphasis on contextual and social relationships has said little of materials but maintained a focus on people and objects. It is amongst the work that has developed as a reaction to this neglect that the approach taken within this thesis has developed. This particularly draws on criticisms of previous approaches by Ingold (2007) and Conneller (2011) which are outlined and discussed.

The second part of chapter three considers how the experience of active properties of materials contributes to an understanding of materials themselves. It is argued that interactions with materials are understood through cosmological schemes and in turn (re)create those beliefs. In exploring how people engage with the world in which they live the concept of elements is discussed in relation to cosmologies and creation myths. These materials form the fundamental components of the world and as such are often considered particularly powerful. Elemental materials are central in relating cosmologies to the lived world. In seeking to investigate the relationship between materials and cosmological beliefs across the late Mesolithic and earliest Neolithic, it is argued that a focus on what may have been key materials could provide insights into cosmological beliefs across the period.

**Chapter four:** During research for previous work it became clear that an in-depth discussion of wood in the late Mesolithic and earliest Neolithic also required consideration of interactions with trees and woodlands. Ethnographic accounts
presented in chapter four explore this dynamic relationship between people, wood, trees and woodland. These accompany short studies of a range of activities that would have involved wood, trees, woodlands and people. This includes a discussion of the palaeoecological evidence for fire disturbances in woodlands in the late Mesolithic, which are suggested to have been both part of subsistence practices and understood through ideas of cleansing and rebirth. The different scales of cereal cultivation in the earliest Neolithic are argued to have shared some facets of understanding with these earlier activities but through new practices encouraged an emphasis on particular aspects of renewal and long-term maintenance of place. Woodworking activities are discussed in terms of the production of bows in the earliest Neolithic. This includes considering in detail the specific properties of the trees and timbers used and the processes and transformations involved. It is argued that how an object is used, understood and treated is bound up with this biography of material interactions and transformations. Importantly, it is suggested that any study of a history of interaction should begin with the procurement of wood from specific trees and places, a concept explored in depth in regard to stone but less comprehensively with other materials. The use of timber in structures in both the Mesolithic and earliest Neolithic is also considered using the approach outlined in chapter three. The Mesolithic worked timber pieces from Bouldnor Cliff in the western Solent.

**Chapter five:** explores interactions with fire and smoke and argues that these phenomena can be studied using the specific material approach laid out within this thesis. The skilled production of a fire brings to the fore certain properties enabling different kinds of action and transformation. This is explored through the study of late
Mesolithic hearths found on March Hill, Yorkshire and those set amongst the shell midden at Cnoc Coig, Oronsay. At Cnoc Coig the specific treatment of burnt materials is also discussed with the trajectory of materials from source to hearth to midden allowing suggestions to be made about the perception of transformation through properties. New uses of fire in the production of pottery are considered in light of these examples of Mesolithic interactions with fire. The complexity of fire and its variability are highlighted, particularly in reference to changes brought about by human interaction.

**Chapter six:** The importance of water is explored as the final of the three materials on which this thesis is focussed. This includes a discussion of the way in which water has been considered within prehistoric narratives and how critiques of functional approaches have begun to produce studies that are more nuanced in their interpretations. The multitude of interactions between people, water and other materials are explored through archaeological narratives of engagement with the sea, rivers and wetlands specifically through activities such as deposition, fishing and travel across water. As with previous chapters, ethnographic examples are used to challenge long-standing assumptions and open up different paths of interpretation. In particular, the temporal rhythms of water, bodily experience of different types of water, and the social motivations for undertaking journeys are explored with reference to ethnographic case studies.

Common themes of the discussions about wood, fire and water are the flexibility, pervasiveness and varied uses of the materials. It is argued that the different
experiences of this range of interactions would have resulted in complex understandings that (re)created knowledge from cosmological schemes. Whilst individual materials can be discussed in detail to provide insights into prehistoric lives, as shown in chapters four to six, it is acknowledged that materials do not exist in isolation but interact. It is suggested that to consider how key materials were understood intersections between materials, and interactions between people and materials, must be studied in a more cohesive manner. To this end chapters seven, eight and nine present detailed case studies in which these moments of interaction within processes, actions and movements are considered in relation to discussions in chapter three about materials, elements and cosmologies.

Chapter seven: The roles of fire, wood and water in cremation ceremonies form the focus of this chapter. Their use in these practices brings to the fore specific properties in these key materials in activities that often emphasise cosmologies. Each contributes to part of a broader process whereby the transformation of the person is comprehended through the materialisation of the body. Within cremation practices connections are made between materials, bodies, spirits and other realms that reflect the role of elemental materials in cosmological schemes and understandings of the relationship between people and the world.

The relationship between wood, fire and water in mortuary practices is first explored through a consideration of Balinese cremation practices as observed by Jane Downes (1999). Cremated remains from Hermitage, Co. Limerick, and from the earliest phase at Haddenham, Cambridgeshire are considered using insights from chapters four to
six to consider the roles of wood, fire and water in these key processes of transformation.

**Chapter eight:** Within the analysis of pre-barrow activity at Ascott-under-Wychwood, Oxfordshire the practice of accumulation features as a process by which key materials were used to emphasise connections to the past and comprehend transformation and decay. Bayesian analysis of radiocarbon dates from the site by Bayliss *et al.* (2007a) has allowed a more precise chronological sequence to be suggested. The implications of different chronological models for interpretation of the relationship between occupation activities and construction events are explored in relation to ideas about architecture and traces of past activity. This particularly considers the extensive spread of midden material found beneath the primary barrow. Practices of accumulation that brought together material from elsewhere on the site were centered on the two structures from this phase. The material that forms these deposits and the combinations into which they are brought are suggested to be concerned with processes of transformation and decay and more broadly with history and past materialities.

**Chapter nine:** The third and most substantial case study of this thesis examines the Mesolithic and Neolithic activity at Warren Field, Aberdeenshire including a pit alignment and timber hall. These features have been recently published and include rich detail about the environmental setting and the use of timbers allowing discussion of specific actions and choices. The use of fire at both the pit alignment and timber
hall and the proximity of the site to a network of rivers allows all three of these elemental materials to be considered.

**Chapter ten:** This chapter draws together themes that run through chapters four to eight, with an emphasis on how the specific material approach taken can provide insights into changing practices and cosmologies across the Mesolithic – Neolithic transition. Insights from the case studies (chapters seven to nine) are brought into dialogue, not with the aim of presenting a comprehensive narrative of the transition but to explore how the role of key materials in cosmologies may have influenced, or been transformed, in new practices and interactions. It is argued that material interactions were central to activities in both the Mesolithic and earliest Neolithic, and therefore, to negotiations between existing cosmologies and new practices.

**1.2 A note on Analogy**

This thesis draws heavily on ethnographic analogy, particularly for materials that do not leave direct archaeological traces, or preserve poorly. The problems and potentials of ethnographic analogy have been widely discussed (*e.g.* Wylie 1985). Whittle (2003) and Strathern (1988) highlight the importance of analogies in challenging preconceptions and opening up avenues of interpretation. Analogies will not however, be imported wholesale and presented as models for understanding prehistoric beliefs and practice. While it may be tempting to directly apply detail from ethnographic studies to archaeological interpretations this would deny the specificities of the archaeological record. Issues of temporal scale in the disjuncture between ethnographic information, that reflects at most a generation of recollections,
and archaeological material, that often represents accumulations of practice and operates at scales of centuries and millennia, presents a further problem to the use of analogy. Furthermore where archaeology is concerned with accumulations of practice and traces of human activity, ethnographic data reflects insights at the scale of a single person or group.

Recent criticism of the use of ethnography in studies of Neolithic Europe suggests that archaeologists fail to take into account the effects of specific histories on the societies they choose to cite (Spriggs 2008). These criticisms have merit in terms of the need to recognise the specific historical contexts of both the societies studied and the anthropological fieldwork carried out. However, to suggest that the use of ethnographies as a source of analogy can only be achieved through a comparison with long-term sequences is unnecessarily restrictive (Roscoe 2009). The use of ethnographic data in this thesis does not suggest direct or absolute analogy but provides possibilities that might be starting points for interpretations and on-going thought.
Chapter 2: The Mesolithic – Neolithic transition in Britain: problems of definition

Despite much discussion the change from Mesolithic to Neolithic ways of being in Britain remains elusive and poorly understood. The debate has been hampered by the different treatment of the evidence, and a focus on different regions, across the two periods. Detailed, and excellent, discussions on the history of thought about this topic already exist and it is not my intention to repeat, or replicate, them here (e.g. Whittle 1997; papers in Whittle and Cummings 2007; Whittle et al 2011; Cummings and Harris 2011; Griffiths 2011; Thomas 2013). Instead this chapter will provide an overview of the approaches used to study the transition. This includes a discussion of the problematic way in which the two periods have been defined, and how this has caused them to be placed in opposition (Borić 2005b). The different approaches by those focussed on either side of the transition have served to underline this divide and has had a significant impact on accounts of the Mesolithic – Neolithic transition in Britain (Borić 2005b; Warren 2007; Cobb 2009; 2013).

It has been acknowledged that archaeological investigation is carried out amid a variety of expectations and prejudices (Thomas 2004) many of which are an inheritance from the 19th century origins of the discipline. For this reason I begin by highlighting the assumptions that were inherent in the foundation of archaeological thought about the transition. Challenges to these assumptions that have altered the
development of ideas about the transition, and challenges that perhaps still need to be reinforced, are also discussed.

2.1 Evolution

In the first edition of *Dawn of European Civilization* (1925) Childe outlined his ideas on the origins of civilization as beginning with the arrival of the Neolithic. In the development of new technologies by Neolithic Europeans, Childe saw the first stages of a process that in time led to inventions such as the steam engine and aeroplane. Similarly, with inherent ‘western’ qualities, Childe saw the first components of commerce and an economic market during the European Neolithic in traits such as the ability to organize labour (Chide 1925, xv). Prior to Childe’s work, previous studies had taken an economic approach to the development of the Neolithic, interpreting cultural change as being driven by advances in technology rather than social traits (*e.g.* Tylor 1865; 1871; Mason 1895). Heavily influenced by evolutionary theory, these approaches sought to establish a chronology for the progress of European societies by tracing major technological milestones and subsequent social changes. Progression from hunter-gatherer to farmer was seen as part of the natural course of development followed by all societies.

> It is both a natural and a proper desire to learn… how barbarians finally attained to civilization; and why other tribes and nations have been left behind in the race of progress

(Morgan 1877, Preface)
Prehistorians working in the nineteenth century, fully embedded in colonial rhetoric, considered hunting and gathering a barbaric, crude way of life whilst agriculture represented security, prosperity and opportunities that eventually led to civilisation (Dennell 1983, 153). The work of ethnographers and evolutionary theorists (e.g. H. Spencer 1897; W. B. Spencer and Gillen 1899, Tylor 1871, 1889) in the late 19th century proposed schemes and sequences of progression based upon observations of contemporary societies that were assumed to represent different stages of a universal progression.

Using both ethnographic studies of Native American communities and historical knowledge, Morgan (1877) suggested three main stages in the evolution of societies; savagery, barbarism and civilization, with a number of sub-divisions in each stage. The stage that a society had reached was measured by the pattern of social organisation and the development of technologies that were thought to characterise progress, for example; the family, subsistence methods, technology, governmental organisation or religion (Table 2.1). This assumed the uniformity of human civilizations and that each society progressed through the same stages of development. The suggestion that cultures that had advanced further through this scheme were more evolved and cognitively superior, appealed to colonial attitudes of the time. This evolutionary view of societies was used to argue that the hunter-gatherers of nineteenth century Australia or southern Africa were incapable of making the leap to the next stage in development. European contact would eventually benefit them, lifting them above their brute status (Dennell 1983, 154).
<table>
<thead>
<tr>
<th>Period</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Lower Status of Savagery</td>
<td>From the Infancy of the Human Race to the commencement of the next period.</td>
</tr>
<tr>
<td>II. Middle Status of Savagery</td>
<td>From the acquisition of a fish subsistence and a knowledge of the use of fire to …</td>
</tr>
<tr>
<td>III. Upper Status of Savagery</td>
<td>From the Invention of the Bow and Arrow, to …</td>
</tr>
<tr>
<td>IV. Lower Status of Barbarism</td>
<td>From the Invention of the Art of Pottery, to…</td>
</tr>
<tr>
<td>V. Middle Status of Barbarism</td>
<td>From the Domestication of animals on the Eastern hemisphere, and in the Western hemisphere from the cultivation of maize and plants by Irrigation, with the use of adobe-brick and stone, to …</td>
</tr>
<tr>
<td>VI. Upper Status of Barbarism</td>
<td>From the Invention of the process of Smelting Iron Ore, with the use of iron tools, to …</td>
</tr>
<tr>
<td>VII. Status of Civilization</td>
<td>From the Invention of a Phonetic Alphabet, with the use of writing, to the present time …</td>
</tr>
</tbody>
</table>

*Table. 2.1* The ‘growth of intelligence and progress of mankind’ as illustrated by the discoveries and inventions that mark beginning of successive phases (after Morgan 1877).

It was assumed that past societies could be placed within these schemes and used to create a chronological framework (Daniel 1967, 144). Chronological periods developed associations based upon these evolutionary stages with a focus on
technological milestones and major social changes. The stage each society had reached would be identifiable archaeologically through evidence of tool use and subsistence practices. These aspects of society were used to trace the development of a civilization and as an indication of the merits of those people. Archaeology allowed an investigation of origins and for the temporal relationship of these evolutionary sequences in different regions to be established. Alongside this there developed an increasing concern with identifying the origins of specific groups (Daniel 1950). In particular studies tracing the development of particular peoples became important in the search for national identity and unity in newly established European countries such as Germany and those under threat, such as Denmark (Kristiansen 1981; Randsborg 2000).

2.2 Culture-history and an ‘epi-palaeolithic’

The focus on evolutionary phases led to an emphasis on identifying major changes within societies ignoring spatial differences and small-scale change. Childe, in contrast, used variations in material culture to define discrete cultures within geographical and temporal limits (e.g. Childe 1925). Rather than simply studying unilinear evolutionary progress Childe was concerned with how the unique qualities and character of European cultures enabled them to adapt and develop the innovations from the Near East (Trigger 1980; 669; also see Childe 1925). Once identified these bounded cultures were used to create a relative chronology based on the assumption that agriculture and metallurgy first developed in the near east and spread by diffusion and migration across Europe (Childe and Burkitt 1932).
The ideas presented by Childe about the development of the Neolithic in Europe did not however, simply involve Neolithic groups moving into Europe and colonising an empty land. Before launching into a search for the origin and spread of a European Neolithic, Childe (1925, 1-21) considered the ‘transitional cultures’ of Europe, those we would today identify as inhabiting Europe during the Mesolithic. These groups were considered ‘survivors’ from the Palaeolithic in contemporary thought and the period was often termed ‘epi-palaeolithic’. This era was set in opposition to the incoming Neolithic and considered the uncivilised state into which civilization was introduced (Peake 1928, 19). The innovations in agriculture, animal husbandry, ceramic and stone technologies that were considered to form the elements of Neolithic cultures were therefore, not thought to have been developed internally by indigenous groups but introduced to Europe from elsewhere.

The indigenous people of Europe were described as living in much the same way as their Palaeolithic predecessors; ‘as savages, in a primitive condition with a lowly, unprogressive culture’ and were considered ‘mere food gatherers; helpless and dependent on Mother Nature’ (Peake and Fleure 1927, 10-13). In contrast Neolithic groups had ‘superior tools, domesticated animals and cultivated plants and were in a position of dominance over much of nature’ (Childe 1925, 1). Contrary to those such as Peake and Fleure, Childe rejected suggestions of a sharp contrast between the two periods, recognising a distinction between the transitional cultures and the preceding Palaeolithic groups. While Childe did not afford these ‘epi-palaeolithic’ groups a role in the development of the Neolithic, some continuity was identified within his work.
with groups of the ‘older people’ surviving into Neolithic times in Belgium, Italy and the Dordogne, whilst others adopted a Neolithic way of life (Childe 1925, 10).

It was via long-distance maritime trade networks, the establishment of small trading settlements and the diffusion of ideas, that Childe (1925, 286-92; 1934, 301) suggested Neolithic culture was brought to Britain. Rather than colonisation on a large scale, Childe argued that indigenous peoples were imitating and adopting Neolithic culture through contact with traders and settlers, and parallels between Britain, Scandinavia and France were drawn. This contact did not result in native societies being completely wiped out and Childe (1925) suggested that anomalous sites and practices were attributable to the surviving indigenous groups. This model of colonisation may have echoed some nineteenth century experiences of agricultural colonisation and the hunter-gatherer way of life.

Great effort was taken by Childe (1925) to highlight the different forms of monument, burial practices and decoration of artefacts. This detailed record was used to identify specific links between geographical areas. These were taken to be evidence of continental influences in Britain and the different continental cultures with whom the indigenous groups in Britain had contact. Childe saw influences from Scandinavia, the Baltic, the Atlantic coast and north-west Europe. For example, chambered long barrows and cairns were suggested to be derived from western Mediterranean influences. While long barrows implied links to Holland and pottery in Scotland closely resembled the Amorican style (Childe 1925, 289).
It was through this typological analysis that Childe traced the origins, spread and
development of ‘civilisation’ in Europe and the subsequent development of these
Neolithic elements within different Neolithic cultures. This interest in origins, within
a culture-historical framework, concerned with the diffusion of ideas and the
movement of people, was echoed by others. Peake (1928) took a similar economic
approach to the development of the Neolithic. Like Childe, the arrival of civilisation
in Britain was equated with the arrival of the Neolithic. Peake (1928) described trade
routes complete with branch lines as the path by which elements of culture reached
Britain, while the form and decoration of artefacts, especially pottery and stone tools,
was used to determine contact and links between areas. Both Peake (1928) and Childe
(1925) suggested that small settlements of traders introduced Neolithic technologies
and subsistence practices to Europe and Britain. These Neolithic ‘arts’ were then
learnt by local populations, who imitated the material culture of the traders. In
essence, from small trading settlements Neolithic technologies spread to indigenous
populations via a diffusion of ideas.

Within this brief overview of Childe’s approach to Mesolithic groups and the arrival
of Neolithic culture two important points should be highlighted. The first is the topic
of maritime movement as central to the arrival of Neolithic elements, and the second
the small reference to the continuation of some groups of hunter-gatherers, albeit only
for a short length of time. Both these topics still feature prominently in discussions of
the transition and contribute to the development of ideas about the mechanisms
through which the Neolithic became established in Britain (e.g. Thomas 2004b;
Cummings and Harris 2011; Garrow and Sturt 2011).
Culture-historians such as Childe (1925; 1929; 1935; 1940), Fox (1923), Peake (1928; Peake and Fleure 1927) and Piggott (1954) recognised that prehistory varied spatially as well as temporally. Influenced by ethnographic studies, these variations in material assemblages were thought to be manifestations of different groups of people who shared the same customs, technology and economy. The emphasis on the identification of bounded cultures, rather than universal developmental stages in societies, resulted in investigations of prehistory that traced the movements and interactions of groups (Trigger 1989, 205). An ongoing concern with the origins of ethnic groups led to work that sought to trace cultures through their material culture and to place them in chronological order (e.g. Childe 1929). These studies worked at increasingly smaller-scales providing detail at a local level but often obscuring the main features of each period (e.g. Piggott 1968). The Neolithic was understood to be primarily an economic phenomenon, involving agriculture and polished stone tools as part of a cultural package, whose development was borne of innate human desires for a more secure life. Invasion and colonisation driven by population expansion were favoured by culture-historians as explanations for the spread of the Neolithic, although the scale of migrations and the contribution of diffusion were debated (Dennell 1983, 1).

In 1958 Childe published the sixth edition of *The Dawn of European Civilization*. The increase in archaeological investigation over the first half of the 20th century meant that a much larger volume of data was available and the tentative beginnings of radiocarbon dating meant that this could be compared chronologically. Amongst
other revisions in the sixth edition, Childe (1958) challenged the use of ceramic
evidence to trace the spread of the Neolithic. Alongside this, through work on the
near east, Childe (1954) had recognised that not all farmers were potters. The
realisation that not all Neolithic traits were necessarily present in all places led more
generally to an emphasis on the mode of subsistence, rather than ceramic technology,
as the key aspect of the Neolithic (Pluciennuk 1998, 63). A shift to agriculture
therefore came to be considered the fundamental change between a Mesolithic and
Neolithic way of life, with other cultural elements of the Neolithic package being
added on to this foundation. Colonisation remained the most common explanation for
the expansion of the Neolithic despite the fact that in some areas evidence was yet to
be found to support the theory (Childe 1958b, 46; Barker 1975, 102).

2.3 Environmental approaches

This focus upon mode of subsistence and resources rather than the development of
technology tied into emerging approaches that were concerned with the relationship
between societies, their environmental settings and economic change. The
establishment of the Fenland Research Committee in 1932 saw archaeologists,
botanists and geologists using a range of techniques to understand climatic and
environmental changes in prehistory as a means of better understanding the
‘background to the existence of prehistoric man’ (Clark 1934, 144). A series of
excavations in the Cambridgeshire Fens allowed the integration of techniques and
data from these disciplines. Members of this committee included Grahame Clark,
Stuart Piggott, O. G. S. Crawford, Christopher Hawkes and Cyril Fox and the
activities of the committee have been argued to be key to the development of
environmental approaches to prehistoric archaeology in Britain (see Smith 1994 for a review of the development of the group).

The approach taken by the group is illustrated by their excavation of Peacock’s Farm, Cambridgeshire, during which a Mesolithic flint core and microlith assemblage were found in a peat layer below Neolithic pottery which itself was below Bronze Age deposits (Clark et al. 1935). Reports on the plant remains, pollen and molluscan shell remains allowed a picture of the environmental setting of the site over time to be constructed. The Mesolithic environment was suggested to have been relatively stable with an alder-pine woodland by open water. The Neolithic horizons suggested a warmer, drier climate and the early Bronze Age featured a period of submergence followed by a willow and reed based ecosystem (Smith 1994, 38). Geological, geographical, palaeo-ecological and archaeological data were synthesized in the report of the excavation in a manner that reflected the aims of this group and linked environmental change with cultural change.

In 1939 Clark published the first edition of Archaeology and Society in which he argued for a more functional approach to archaeology. Clark outlined an ecologically influenced model of society, using the analogy of an organism within an ecosystem with survival as the prime goal. Society was described as made up of economic, social and political systems with each described as an adaptive mechanism developed in response to ecological constraints (Clark 1939). This school of thought argued that innovations came about in response to external changes in the environment. Childe (1950, 2) himself later explored the idea that specific cultures were an adaptation to
the specific environment they inhabited. Childe argued that a culture established in one environment would be likely to change significantly if transferred to another. This discussion of the relationship between a society and their landscape is a point that has been developed in post-processual approaches.

Clark encouraged an approach that integrated the study of animal bone, pollen and other organic remains by palaeobotanists and zoologists in reconstructing subsistence patterns and social organisation. This was exemplified by excavations at Star Carr, during which Clark emphasised the recovery of organic materials and the study of contemporary vegetation patterns (see Clark 1954; 1972). By investigating seasonal changes in local vegetation and climate, and considering these alongside traces of activities and artefacts found at the site, Clark sought to document social life and subsistence patterns of Mesolithic groups. This functional approach led to Clark’s interpretations of Star Carr as a winter base from which a small group could hunt deer (Clark 1954). His interpretation focussed on subsistence, technology and mobility systems within society rather than try to say anything of the more complex social relationships, specific practices or belief systems of the group using the site.

In *Prehistoric Europe: The Economic Basis* (1952) Clark explored change within three climatic zones in Europe. Culture and the environment were explicitly linked with one affecting the other. However, the mechanism by which these causes brought about change differed from those proposed by culture-history approaches. Rather than the movement of people and diffusion of ideas bringing about change, technological innovations, population fluctuation, climate change and cultural contact were
suggested to be external factors that might upset the equilibrium of the ecosystem within which environment and culture co-existed. In a paper criticising the over-dependence of archaeologists on an ‘overseas influence’ to explain change or developments in British prehistory, Clark (1966) addressed the question of the beginning of the Neolithic. Whilst pottery styles or lithic technology could, he argued, be transferred between groups, subsistence, as a fundamental aspect of culture, could only be introduced through population movement (Thomas 1999, 445). The beginning of the Neolithic in Britain, understood to primarily involve a change in subsistence, therefore could only be attributed to colonisation. Later adoption of agriculture by indigenous groups or changes in lithic technology was explained as driven by changes in the environment, climate or demographic of an area.

Human interaction with natural materials and substances is given prominence within Clark’s work through the inter-relationship of society and environment. However, the functional approach taken means that materials were only discussed as resources and in relation to economic activities or exploitation. Discussion of stone axes in Britain for example, considered the different sources of these in Britain and their likely movement but only through a lens focused on trade and their functional value as tools (see Clark 1952, 247-49).

Clark sought to move away from the typological approaches that had dominated archaeology to an approach that attempted to reconstruct the different aspects of economic life in prehistory. This approach sought to link changes in the environment and climate with economic and cultural change. The relationship between society and
nature takes precedence, with each section of the book part of a wider study of how people adapted and survived in Europe throughout prehistory. Within Clark’s work the factors that brought about change in society remained the same, however, the mechanisms by which these factors brought about change altered. Perhaps more significantly Clark encouraged an archaeology that considered economies and the social organisation associated with them. A shift had occurred in archaeological approaches from an interest in technology to one that prioritised subsistence and economy, although still grounded within the chronological framework developed in the 19th century and so maintaining the divisions of that system (Dennell 1983, 2). This shift was continued in the developments that established the new archaeology.

Within processual approaches climate change, population pressure and resource failure have repeatedly been cited as causes of cultural change (e.g. Binford 1968; Meyers 1971; Flannery 1973; Cohen 1975, 1977; Bonsall et al 2002). However, arguments made purely on these grounds can be criticised for producing simple, static and passive models of society. The trend for detailed local studies was reversed in these studies with cross-cultural studies being used to look for common features and study general processes of change (Dennell 1983, 3). Thematic studies became more prevalent focussing on technologies or cultural adaptation to the environment. Binford (1965, 205) suggested that culture interacted with a number of other systems such as climate and demographics but stressed that this was not a necessarily a simple deterministic relationship. Instead he argued that culture was at the point where society and the environment meet, with cultural innovations a way of adapting to changes (Thomas 1999, 450). These studies challenged the idea that the transition to
the Neolithic simply involved the replacement of one group with the next in a swift, all-encompassing, unidirectional manner. Rather than talk of colonisations, the spread of a farming economy began to dominate discussion of the Mesolithic – Neolithic transition.

### 2.4 Climate Change

Models of the adoption of agriculture that cite climate change as the motivating factor still populate the archaeological literature. Bonsall et al (2002a), for example, deconstructed the Mesolithic – Neolithic transition into four questions, the first of which was ‘(i) HOW did the shift from foraging to farming happen?’ (Bonsall et al 2002a, 1 emphasis added), giving primacy to subsistence method as the fundamental change in society. The importance of cattle and cereals socially is suggested to account for the emphasis on agriculture and allows Bonsall et al (2002a, 6) to argue that climate and the environment, particularly soil composition, were the key factors that governed agricultural, and Neolithic, expansion.

Using an approach reminiscent of work by Clark (see above, section 2.3) multiple strands of evidence are called upon by Bonsall et al to demonstrate the uptake of agriculture including: a proposed connection between the elm decline and the opening up of the landscape by farmers; evidence in skeletal samples for a shift in diet; evidence for cultivation in palynological data; and the identification of a rapid increase in the amount of domesticated remains in faunal assemblages (Bonsall et al 2002a, 9-10). The stimulus behind these changes is suggested to be a mid-Holocene change in climate which peaked c. 4100 - 3800 BC.
Climatic conditions prior to this change are suggested to have made agriculture less viable. However, during this period the climate became more continental with colder winters and warmer summers which increased the chances of successful cereal cultivation, the importance of which had already been underlined. A change in climate therefore ‘facilitated the uptake of agriculture by indigenous hunter-gatherers’ (Bonsall et al 2002a, 14) and formed the ‘trigger’ for agricultural expansion into Britain and Scandinavia (Bonsall et al 2002b, 9). The assumption inherent in this model is that Mesolithic groups aspired to be farmers but were inhibited by the environment and climate.

2.5 Population movements: ‘the Neolithic settlement of our Island’ (Case 1969, 176)

From the beginning of discussions about the transition to the Neolithic, in contrast to models of external factors driving internal change, models of colonisation have featured within the literature, as already mentioned. These have argued for the movement of both populations and material culture. In 1954 Piggott suggested that early Neolithic colonists would have had little contact with the small indigenous population, and cites Windmill Hill as an example of a relocated northern French tradition (Piggott 1954, 369) that evidences the movement of groups from that area.

Presenting a model based on the movement of small groups from the continent Case (1969) discussed colonisation in more detail than previous accounts. Case (1969)
suggested that scouts may have preceded the arrival of a handful of pioneers before significant numbers of permanent settlers. Unlike previous models Case (1969) considered the logistics that might be involved in this model of colonisation including, vessel type, the timing of journeys, transportation of livestock, and the vulnerability of seed corn. The challenges involved in these movements and in the initial establishment of agricultural communities were discussed in detail resulting, importantly, the first model of transition that attempted to problematise the processes of transition (Griffiths 2011, 17).

Ammerman and Cavalli-Sforza (1971, 1973; 1984) retained the focus on subsistence within their model of population movement and aimed to locate the Neolithic frontier spatially and temporally. Within their methodology the spread and diffusion of the Neolithic through Europe was discussed as synonymous with the spread of agriculture with evidence of one indicating the presence of the other. Using radiocarbon dates to trace the neolithisation of Europe a ‘wave of advance’ model based on population movement was proposed. A rise in population caused by sedentary farming was argued to have resulted in the movement of people when unsustainable levels were reached in local populations, causing an interrupted wave of movement across Europe.

Despite work by Childe (1954, 1958, see above 2.2), Ammerman and Cavalli-Sforza (1971; 1973) continued to discuss the Neolithic as if it were an unchanging singular package. This allowed dates drawn from contexts with Neolithic material, but no evidence of agriculture, to be considered valid for their study (Thomas 1996a).
Further criticisms came from those who questioned the application of large-scale models to a transition that became recognised as having taken place in a diverse range of local contexts. Kinnes (1985) for example, noted that the potentially rapid nature of the transition to the Neolithic across Britain could not be explained by immigration and population expansion. More recently, the failings of the methodology in regards to the taphonomy of samples and interpretation of the statistical data has highlighted the inaccuracy in the model (Griffiths 2011, 17). These criticisms have not however, prevented the continued use of similar approaches to produce models of colonisation (e.g. Collard et al 2010).

The movement of groups into Britain from the continent is still advocated as a model for the beginning of the transition, most vociferously by Sheridan (1986; 2000; 2002; 2003a; 2003b; 2004; 2007; 2010a; 2010b). The model proposed by Sheridan involves a ‘widespread, relatively rapid, diaspora-like colonisation, shortly after 4000 cal BC, by small [Carinated bowl]-using groups of farmers from the Continent’ (Sheridan 2007, 466). Using a method reminiscent of culture-historical studies similarities in monument form and material culture between British sites and Neolithic traditions on the continent form the basis of Sheridan’s argument, with particular emphasis on parallels in pottery traditions (2003a, 5). By identifying these comparable stylistic traditions Sheridan has suggested routes by which immigrant groups arrived in Britain. Parallels in tomb typology between monuments in Britain, Ireland and southern Brittany and the early date of material in some of the tombs in Britain is argued to be evidence of immigrants from southern Brittany moving northwards.
along the coasts of Ireland and western Britain (Sheridan 2010a, 885), an idea also proposed by Lynch (1975).

Specifically, the passage tomb at Achancreebeag, Argyll and Bute, is suggested to show close similarities to those in Brittany whilst the pottery assemblage from the site is suggested to be of a particularly early date for the British Neolithic with its closest parallels in the Morbihan area of Brittany (Sheridan 2000, 1). Sheridan explicitly rejects the possibility that indigenous Mesolithic communities would adopt and develop new funerary practices in a short space of time and therefore, attributes the tombs to immigrant groups (Sheridan 2000, 2010a). Movement along the east coast of Britain to north-east England and Scotland is also suggested alongside colonisation from north-west France to south-west England as evidenced by pottery showing similarities to continental traditions. In particular the assemblage from Claish, Stirling is suggested to demonstrate that the structure was built by immigrant groups (Sheridan 2002).

This model relies on an assumption that the first appearance of a Neolithic trait correlates to the presence of a Neolithic group, a position reminiscent of those who traced cultural groups through prehistory in the earlier part of the 20th Century (see above 2.2). Importantly, unlike some models from that period, this is not simply a case of Sheridan advocating the movement of immigrant farmers into Britain and Ireland but also a rejection of the idea that indigenous groups could be involved in the appearance of Neolithic traits. These determinations stem from an approach that seeks
empirical evidence, for example correlation in pottery style, without accompanying theoretically driven discussions of the implications.

Instead Sheridan's argument is based on stylistic similarities between areas, with an assumption that parallels in the design of pottery implies parallel lifestyles (Thomas 2004). In contrast to Sheridan, social approaches to the transition have recognised that the distribution of material culture and level of similarity in form or style does not reflect the amount or intensity of social interaction between communities (Thomas 2004, 115). The problematic nature of stylistic correlation and the use of typologies as a dating method has also been highlighted most recently by Griffiths (2011, 20-21). More pragmatically Kinnes (2004) has noted that despite suggestions of continental immigrant groups arriving via identified routes the specific origin for these communities has not been located, including the Carinated-bowl tradition.

2.6 Models of Adoption

[T]he origin of ideas of British Neolithic colonists is not in the archaeology of northwest Europe but ‘in the minds of 19th century prehistorians’

(Dennell 1983, 186).

Writing about the reliance on the invasion hypothesis in British prehistory Clark (1966) suggested that archaeology was failing to consider the ‘lives of the people who, generation by generation, age by age, in unbroken succession occupied and shaped the culture of the British Isles’ (Clark 1966, 173). Criticising the over-
dependence of archaeologists on an ‘overseas influence’ to explain change or developments in British prehistory. Clark (1966) suggested a role for existing populations in the Mesolithic-Neolithic transition. The increased use of ethnographic analogy in archaeology had led to a realisation that it was not inevitable that hunter-gatherers would take up agriculture when it became available. Despite the affluence of hunter-gatherer lifestyles however, it could not be denied that agriculture was taken up in Europe, most likely by indigenous populations and archaeologists sought for reasons or a motivation for the adoption of agriculture by hunter-gatherers. Binford (1968) for example, suggested that an imbalance between population and food supply, caused by an increase in the number of people, a decline in the availability of wild resources, or both, forced the adoption of farming by hunter-gatherers. Flannery (1969) expanded on this to suggest that agriculture would initially develop in marginal areas where a food crisis would be more likely. Environmental changes, population fluctuation, technological innovations or cultural contact were among the factors suggested to be the major causes of change as already discussed (sections 2.3, 2.4).

In the 1980s a more critical use of analogy led to the development of models that thought in more detail about Mesolithic indigenous communities and the processes of transition. In an extensive study of European prehistory, Dennell (1983) presented a similar focus on economy and subsistence as earlier processual archaeologists and changes in these facets remained at the heart of discussions about the transition from Mesolithic to Neolithic ways of life. Dennell (1983) employed the model of an agricultural frontier to his reading of evidence from Europe, however, importantly,
this model also encompassed ideas about the nature of interactions between Neolithic indigenous communities and the processes that surrounded the adoption of resources.

Communities either side of the Neolithic frontier were suggested to have been open to change and ‘meshed in a complex web of contacts that extended across different cultural, linguistic and… economic boundaries’ (Dennell 1983, 175). Mesolithic groups were discussed as capable of evaluating different subsistence methods, evaluating the time and labour involved, and the potential improvement in their diet. For example, cereals and sheep may have been seen as a solution to the need for winter food supplies. The value of pottery as a storage and cooking vessel, and perhaps as a medium to express status, may also have been recognised as an aspect of Neolithic culture that could be incorporated into a Mesolithic way of life.

In relation to Britain, Dennell (1983, 180-187) highlighted the work by Jacobi (1976) which had shown the lack of similarity in lithic technology between Britain and the continent, leading to the suggestion that British technology of the period did not show any connections with, or influences from, Europe. From this it was inferred that Mesolithic communities were isolated and cut off from continental Europe. Whilst acknowledging the isolation of Mesolithic groups in Britain Dennell (1983, 182-187) suggested that the late Mesolithic had seen increased maritime travel and interaction with the continent. Population pressure was argued to have triggered Mesolithic intensification of woodland clearance and increased exploitation of coastal and marine resources, which in turn led to enhanced seafaring abilities. Through extended travel and contact with the continent, Mesolithic populations are suggested to have
become aware of pottery, cereals and domesticated animals, which were then adopted and incorporated into existing practices and traditions (Dennell 1983, 182-187). Whether due to population pressure or ‘reasoned’ Mesolithic attraction to novel resources, the model proposed by Dennell suggests that Mesolithic populations ‘accomplished their own economic and social transformations’ (Dennell 1983, 187) within five centuries.

A similar argument was put forward by Price (1983) who suggested that successful Mesolithic adaptation in north-west Europe caused a delay in the uptake of agriculture. Hunter-gatherer groups in Scandinavia adopted and used pottery without needing to take up farming. Rather than invading farmers it was suggested by Price (1983) that only a change in climate eventually brought about economic change within the context of existing societies.

Also drawing heavily on evidence from Scandinavia, Zvelebil and Rowley-Conwy (1984; 1986) suggested that the adoption of agriculture by hunter-gatherer communities progressed through stages of ‘availability’, ‘substitution’ and ‘consolidation’ with a different relationship to domesticated resources established in each. Echoing earlier studies of the relationship between society and the environment Zvelebil and Rowley-Conwy (1984) argued that a crisis in wild resources, or a perceived advantage to becoming farmers, must have driven the process. The emphasis on processes of change allowed for each stage to last different amounts of time with the potential for variation in the timing and intensity of change (Zvelebil and Rowley-Conwy 1984, 104). This model, and that proposed by Dennell, explicitly
addressed the motivation for indigenous populations to adopt agriculture resources rather than why Neolithic populations expanded, with the dynamics of cultural contact suggested as a cause of change (Pluciennik 1999, 666). However, the implication remains that only when a community was dependent on agriculture were they Neolithic (Thomas 2007, 424). The Neolithic was still discussed as a cohesive package adopted wholesale, with the adoption of agriculture considered the primary change. Although there were indications of regional variation in the mechanisms and processes involved in the adoption of agriculture as demonstrated by the work on Scandinavia, the continued focus on subsistence meant that this was only discussed in economic terms with other changes in material culture given less attention (Whittle 1997, 6).

2.7 Unpacking the Neolithic

Whilst still advocating the arrival of small groups in Britain from the continent, Whittle (1977) allowed Mesolithic groups a role in the development of the early Neolithic. Notably, Whittle (1977, 241) also considered the social dynamics and implications of movement for Neolithic migrant communities in terms of disrupted marriage patterns, traditions and kin relations. The need to understand social processes, both within and between different communities, began to be addressed. In the western Mediterranean, for example, it was suggested that earlier networks and connections between hunter-fisher-gatherer communities and Cardial Ware Neolithic groups provided a pathway for the introduction of elements of the Neolithic (Lewthwaite 1981). In Scandinavia, rather than the replacement of Late Ertebolle groups with incoming Neolithic farmers, Jennbert (1985) suggested that agriculture
may have been introduced via networks of contact and exchange with continental Europe, involving gifts of cattle and the movement of people in marital alliances. Within this work the relationship between social change and changes in material culture is emphasised as crucial to understanding the conditions within which change occurred (Jennbert 1985, 196).

From these discussions of acculturation came a deeper consideration of the possibility that elements of the Neolithic ‘package’ may have been adopted separately and selectively by indigenous hunter-gatherer groups, rather than imported as a wholesale culture (Thomas 2007, 424). Importantly, this altered understandings of how the Neolithic itself was perceived by archaeologists. As part of this conceptual shift, work by Hodder (1990) that focussed on the social changes involved in becoming Neolithic, argued that these changes may have occurred prior to the uptake of agriculture. Although the generalised model presented by Hodder has now been criticised for a failure to recognise the historic specificity of a culture-nature divide within western thought, it marks a significant break with previous work (Thomas 2013, 149-152).

Rather than being seen primarily as a novel method of subsistence from which other traits developed, emerging ideas about the central role of material culture as a social and symbolic resource, led to suggestions that the Neolithic was a suite of individual elements that could manifest in a variety of ways (e.g. Thomas 1996a). A focus on active material culture led Thomas to argue that the Neolithic developed or came into being through the way in which new materials and symbolic media transformed
everyday existence, movements and activities (Thomas 2007, 424; 2008, 81). Alongside this the importance of the local, immediate context in which these changes occurred and the unique economic, social and cultural conditions amongst different indigenous communities meant that no single narrative could be proposed for all of Britain, or Europe. Studies of the transition again shifted in their scale of focus (e.g. papers in Whittle and Cummings 2007; Hey and Barclay 2007; Cobb 2008; 2009) and narratives that sought to cover a wider area have attempted to do so through a series of small-scale studies (e.g. Whittle 1997; Griffiths 2011).

Reactions to these theorised interpretations of the transition have essentially argued for a return to earlier models of agricultural settlement (e.g. Rowley-Conwy 2004; Bradley 2008; Sheridan 2003a; 2007; 2010a and see discussion above 2.5). In part this has been encouraged by stable isotope evidence that seems to suggest a rapid and wide-reaching transition that involved a change in diet including abandonment of marine resources (e.g. Richards and Hedges 1999a; 1999b; Schulting and Richards 2002a; 2002b; Richards et al 2003; Cramp et al. 2014). Schulting and Richards (2002a) argued that the move away from marine resources was part of a shift to domesticated terrestrial fauna, however, the status of food in terms of wild or domestic cannot be determined from isotopes.

While a move to domesticated fauna cannot be demonstrated the abandonment of marine resources is a pattern seen elsewhere in Europe. It has been suggested that Neolithic peoples did not simply ignore marine resources in favour of the new agricultural economy, but actively rejected them as part of a new web of food taboos,
religious beliefs and myths about the sea (Schulting 1998; 2000; Richards 2003; Thomas 2003). There is however, reason to be cautious about trends identified in stable isotope data as discussed by Milner et al (2004). Important points include the time-depth over which an isotope signature develops (10 – 15 years) and the complicated ways in which organisms, including food resources, accumulate their isotopic signature. The imbalance in sample numbers between the Mesolithic and Neolithic periods and coastal location of the Mesolithic samples in the studies listed above is also highly problematic.

Interpretations of the isotope data have highlighted different approaches to the transition. It has been suggested that debate between these the two positions, colonisation and acculturation, have come to dominate the literature with debates centered on the role of indigenous Mesolithic groups in the transition, and the rate at which transition occurred (Cummings and Harris 2011). This however, is a broad generalisation that ignores the complexities of some proposals. More correct, and perhaps indeed more helpful, is the suggestion of Whittle et al (2007, 135) that colonisation models focussed on external stimuli (e.g. competition for resources, climate change, population pressure etc…) and those that suggest gradual, internal change could be considered alongside each other. The immediate concerns of interaction between different groups, changes in subsistence and knowledge can be discussed alongside the evidence of climate change ‘at a scale of centuries’ (Whittle et al 2007, 135).
Alongside calls for models of transition that reflect the complexities of the processes involved, an emphasis on chronology has developed. This has been particularly stimulated by the stable isotope data discussed above and suggestions of a sudden dietary shift representing a rapid shift to the Neolithic simultaneously across Britain (Schulting 2000, 32). The influence of these ideas on discussions of the transition has been highlighted by Griffiths (2011, 26-28) who strongly criticises the lack of assessment of radiocarbon results in those studies. In response the recent analyses by Griffiths (2011) and Whittle et al (2011) are large-scale dating projects utilising Bayesian statistics to present a timetable for the beginning of the Neolithic.

The results of these extensive projects suggest that the earliest evidence of Neolithic features is found in the Thames estuary in the southern England in the 41{\textsuperscript{st}} century BC and includes Carinated bowl pottery, timber buildings, flint mines, long barrows and long cairns (Whittle et al 2011). By the 39{\textsuperscript{th}}-38{\textsuperscript{th}} centuries BC evidence for Neolithic innovations was present in southeast England, and the Cotswolds (Griffiths 2011, 30). By the 38th century Neolithic material culture was present across southern Britain, in southern Wales and the Marches, Ireland, the Isle of Man and in Scotland up to the Great Glen (Bayliss et al. 2011, 801–3).

As noted by Thomas (2013, 185), while this framework is important it does not provide insight into broader questions regarding the scale of population movement from the continent nor the social processes involved in interactions with indigenous groups. It could be argued that the analysis maintains the identification of the Neolithic through material traits. A model based on small-scale colonisations is
proposed by Whittle et al (2011) with acculturation beginning after a few decades. Motivation remains unknown in this model despite the precise timetable. An important criticism by Thomas (2013) highlights the inherent suggestion that acculturation only occurs when Neolithic groups cross the water. When Mesolithic sea-faring is widely acknowledged in the literature (see chapter six) the reliance of Mesolithic communities on Neolithic groups to bring their new materials and innovations across the water is problematic. This position represents a wider problem in the way Mesolithic communities have been defined, and are discussed, in models of the transition an aspect I will briefly discuss in the next section.

2.8 Mesolithic Misunderstandings

Originally drawn on artefactual grounds, the boundary between the two periods has had a significant impact on accounts of the Mesolithic – Neolithic transition in Britain and has been underlined by the different approaches and traditions of study of those focussed on either side of the transition. The definition of two separate periods has served to create a situation whereby the late Mesolithic and early Neolithic are studied in isolation with little interaction and resulting in studies of the transition coming from one tradition or the other and rarely covering the period evenly. As Bonsall et al (2002a) noted this has been a significant barrier to research (see also Cobb 2004; 2008; Conneller and Warren 2006).

Archaeologists studying the Mesolithic period have traditionally focused on economy, technology and the environment through the study of material such as lithic scatters and animal bone assemblages (e.g. Mellars 1975; Deith 1983; Maclean 1993;
Wigforss 1995). Those studying the Neolithic have, in contrast, placed more emphasis on social questions and have tended to concentrate on understandings of ritual practice, death and landscape, particularly through studies of monuments (e.g. Edmonds 1997; Bradley 1998; 2000; Whittle et al 1999; Lamdin-Whymark 2008). Alongside this contrast in approach the conceptual divide between the two periods has been reinforced through the imposition of the categories of hunter-gatherer and farmer.

This distinction is especially important when models of the transition have focussed so heavily on subsistence practices. A legacy of nineteenth century thought (as discussed above 2.1, 2.2) led to an understanding of hunter-gatherer existence to be entirely ‘parasitic’ (Childe 1958b, 34), controlled by nature and only taking from the environment. Farmers in contrast, were understood to have controlled nature and invested labour and materials in food production (Dennell 1983, 149). Writing in 1948, for example, Clark suggested that, due to ‘greater cohesion and capacity for co-operative enterprise’ (Clark 1948, 69), groups of Neolithic farmers were able to construct timber weirs to take advantage of the annual migration of fish, whilst Mesolithic fishing in the same paper is described as opportunistic.

The assumption inherent in many models of the transition, that farming was the preferable and more desirable method of subsistence was built on a foundation that linked farming to civilization and therefore represented progress (see above 2.1). Ethnographic studies however, altered this perception and farming has been shown to be more labour intensive and time consuming. Agricultural societies were shown to
be as vulnerable to environmental factors as hunter-gatherers, at times more so when anchored to one place. For farming to be productive and usefully reliable would take generations while a system became established and techniques refined.

While anthropologists have produced fresh insights into the complex and rich lives of hunting and gathering communities (e.g. Lee and DeVore 1968; Sahlins 1974; Jordan 2003; York et al 1993; Gow 1995) that have fed into the interpretive frameworks used by later prehistorians, many of those studying the Mesolithic have, until recently, failed to utilise ethnographic data beyond functional cross-cultural comparisons of food production, resource procurement and adaptation to the environment (e.g. Donahue and Lovis 2006; Evans et al 2007). These studies often produce generalised and sterile discussions which ignore the variety of Mesolithic communities, their material culture and the complex social relations and practices of which they were part.

The application of simplistic stereotypes has not been confined to Mesolithic societies. In the study by Dennell, outlined above, having suggested that Mesolithic populations in Britain had the ability to travel by sea it is argued that it is more likely that these populations brought cereals and domesticated animals to Britain than the land-based Neolithic agriculturalists (Dennell 1983, 180-187). Whilst this argument was a step forward in allowing Mesolithic populations more potential than previously allowed, and less isolation, it maintained the long-standing image of Neolithic communities being solely agricultural, tethered to, and focussed on, the land.
The problematic use of these definitions of Mesolithic and Neolithic societies in models of the transition was highlighted as interpretive archaeologies began to critique past models (e.g. Bradley 1984; see also papers in Bradley and Gardiner 1984). Jennbert (1985) suggested that, although necessary terms for classification, the distinction between Mesolithic and Neolithic should be ‘softened’. However, the persistent use of a chronological division into two discrete time blocks, a perceived dichotomy in subsistence practices, and the continued reliance on traditional narratives that emphasise contrasting ways of life, has meant the two periods have continued to be defined and placed in opposition. This stark contrast has been reflected in models of the transition that describe a shift between these two categories with little room for the many variants that lie in between foraging and farming ways of life (e.g. Sheridan 2007; 2010b). The forager and the farmer have been discussed as if they were different entities that interacted at the fringes of their two respective worlds (Borić 2005b, 81).

As noted by Warren (2007) recent developments in Mesolithic archaeology have not been fully embraced by those studying the transition (but see Cobb 2008; 2009; Thomas 2013). In particular Warren (2007, 323) states that there has been a failure to engage with the detail, and specific characteristics of Mesolithic archaeology. Whilst this remains a fundamental problem in many narratives of the transition (e.g. Cramp et al 2014), recent re-evaluations of the late Mesolithic have begun to alter perceptions of the role of hunter-gatherer groups in the spread and development of the Neolithic. The development of new approaches to Mesolithic archaeology and new interpretations of the period (e.g. Milner and Woodman 2005; papers in Conneller...
and Warren 2006; Gray-Jones 2011) is starting to bring about a welcome re-appraisal of existing models of the transition (e.g. Thomas 2007; 2013; Cobb 2005; 2009; 2013). This thesis aims to contribute to this emerging literature by using the same theoretical concepts and approach to consider evidence from across the period and produce a more nuanced study of the transition that does not seek to impose academic traditions from either period. This does not mean applying Neolithic approaches to Mesolithic material but exploring similar questions of the archaeology using the same interpretive methods. The following chapter establishes both the approach that will be used in this thesis and the questions that will be asked of the material.
Chapter 3: Materials as Elements

Interactions between people and materials, and the way they are used, are bound up with understandings of the world, both articulating these understandings and a product of them. Materials are meaningful and this meaning is (re)created through different practices as people interact with materials. In the early 20th century, empiricist approaches to archaeology focussed on the categorisation of objects with the aim of writing an ordered narrative of the past based on an understanding of the economy and evolutionary change. These narratives played a central role in establishing a framework for archaeology via categories and typologies. Later approaches built on this foundation and placed artefacts into frameworks shaped by social systems, the environment and cross-cultural analogies, leading to accounts of material culture as static and functional. The subsequent development of interpretive archaeology led to the suggestion that objects as symbols, texts and metaphors constitute a reflection of society (e.g. Hodder 1982a, b). This emphasised the need to consider material culture in socially specific relationships. A more contextual approach involved the integration of social theory developed in other disciplines (Jones 2012, 6), with archaeology providing an illustration for these social theories (e.g. Barrett 1994). Although artefacts are considered active in these studies (e.g. Tilley 1990; Dobres and Robb 2000), little is said of materials themselves, with the emphasis on people and society.
The introduction of phenomenological approaches in the discipline since the 1980s has encouraged archaeologists to think about active material culture through a concern with past processes, performance and the sensual relationship between people and things. More recent work (e.g. Ingold 2007; Conneller 2011; Cummings 2012; 2013; see papers in Alberti et al 2013) has moved beyond a phenomenological approach and has sought to address the 'physicality of the material world' (Olsen 2003), an aspect suggested to have been neglected by the search for meanings and signifiers in studies purely of material culture (Boivin 2004; Knappett 2005; Ingold 2012). Despite these developments however, two problems remain with mainstream archaeological approaches to the archaeological material we study, and these in turn feed into the issues of definition encountered in interpreting the Mesolithic – Neolithic transition. These are further defined below and a suggestion is made as to how we might work towards approaches to material culture that overcome the problems this brings.

The continued distinction between subject and object; human and material worlds, results in the implicit understanding of artefacts as the impression of ideas onto inert matter (Ingold 2007). This distinction has led to the creation of, and reliance on, categories which too often leads to a fixed and static portrayal of the past. One aim of this thesis is to think about engagements between people and materials as part of wider processes and histories in the past. This approach to material culture will involve consideration of the fluid movement of materials through time in contextually specific environments. This will allow for a more nuanced portrayal of the active materials caught up in past events and transformations.
3.1 Materiality

In recent decades, materiality has become the centre of approaches concerned with material culture (e.g. Graves-Brown 2000; Rowlands 2005; Stevenson & White 2007) and has been argued to be central to how we understand ourselves (Miller 2005). There is however no clear agreement on what materiality is or what is meant by the term (Ingold 2007). Miller has suggested that two broad theories of materiality have developed; the first is a ‘theory of things’ that concerns itself only with objects, and the second is a philosophically influenced approach that seeks to break down the divide between subject and object and situates material culture within a wider concept of culture (Miller 2005, 4). Attempts to create a ‘theory of things’ have, at their most simplistic, viewed material culture as symbolic representations of social relations while philosophical thought has sought to resolve the subject/object dualism at an abstract level. Ingold (2007) has heavily criticised the first approach and suggests that there has been too much focus on creating a ‘theory of things’ that incorporates agency, ideology, practice theory, objectification, power, immateriality and a myriad of other concepts drawn from cultural theory.

Ingold argues that these concepts discuss materials as mute and only a foundation on which humans attach meaning. In archaeology this has, in part, been due to a desire to get beyond the technical and typological studies that have dominated the field (Conneller 2011, 6), but Ingold (2000; 2007; 2010) highlights that this is also symptomatic of a wider theoretical division whereby the material world has been discussed only as an inert and passive resource upon which pre-existing ideas of form
are imposed through physical force of some kind (e.g. Godelier 1986; Gosden 1999; Williams and Costall 2000).

While the concern regarding the dichotomy between form and matter is rightly highlighted, and discussed more below, Ingold’s criticism undervalues these theories and the emphasis they place on the importance of objects and the material world in the (re)production of ourselves and society. For example, the work of Bourdieu (1977) demonstrated that material culture can act to condition and socialise people by determining expectations, influencing behaviour, and (re)creating identities. For Bourdieu our everyday engagement with material culture, and the categories, spatial organisation and repeated associations of everyday things, acts to reproduce the less tangible aspects of society by establishing ‘habitual ways of being in the world…[whose]…underlying order emerges as second-nature, or habitus’ (Miller 2005, 6). Perhaps the best known example of this is Bourdieu’s discussion of the Kabyle house in which the spatial organisation and associations of material culture mirror those orders found within society and ‘which govern all the universe’ (Bourdieu 1970, 160). This understanding of material culture, despite focussing on objects, should not be dismissed when discussing materiality or material culture. Many of the themes drawn out by Bourdieu, such as material agency and social (re)production through engagement with the material world, are points also emphasised by those seeking to write narratives that go beyond the bounds of artefactual form.
However, as mentioned above, object-focused studies of materiality have been accused of failing to overcome the polarization of mind and materials (e.g. Ingold 2000; 2007). Both materials and artefacts are understood as having been shaped and given significance by society; things are only mobilized by the cultural meanings and values attached to them. Similar critiques in Anthropology have questioned approaches to material culture in which objects are a tool with which we can pursue an understanding of cultural contexts and social life (Henare et al 2007, 3). In such approaches society is discussed as distinct from things which only serve as an illustration of social systems (Jones 2012, 10). This emphasis on the role of society in discussions of materiality continues the dominance of the dichotomy of mind and matter, society and things in archaeological approaches to artefacts and has rendered materials mute and ‘invisible’ in our discussions.

Within these established oppositions there is a dominance of the intellectual over the physical; form over matter and human over nature (Deleuze & Guattari 2004). Within archaeology the focus on artefacts and their form led to the development of discrete categories of ‘things’. The assumption of a pre-existing design in the mind of craftsmen has led to materials being largely overlooked beyond their existence as a blank canvas. Echoing the critique of recent approaches to material culture in Anthropology, Boivin (2004) has suggested that, despite the theoretical developments that post-processual archaeology encompasses, we have only succeeded in shifting from studying objects as static reflections of social systems to thinking about objects as physical signifiers of abstract concepts in people’s minds. These abstract concepts have become the focus of our study with artefacts a visual hint as to their form.
These comments however are not a criticism alien to those studying material culture. Drawing on the work of Hegel, Miller (2005, 8-10; 2010, 59) has argued that that the division between the mind and materials can be overcome in theories of materiality. Hegel’s theory of objectification argues that there is no separation between people and materiality as the process of creating a form not only involves the physical crafting of an object but the creation of ourselves through the reflection and understanding of our identity, and the glimpse of possibilities, within that process. Humanity is therefore not prior to what it creates as it is through that creation that we know and understand ourselves and there cannot therefore be any ‘pre-objectified’ forms. Much of this argument is connected to questions of agency and in recent decades the object agency has become an explicit focus of study.

3.2 Agency

Barrett (2001, 141) defines human agency as ‘the means by which things are achieved… [it] operates knowledgeably and reflectively’. Shanks and Tilley discuss objectification as brought about through human agency:

…inert matter is transformed by social practices or productive labour into a cultural object, be it a product for immediate consumption, a tool or work of art. Objectification – the serial transformations of matter into cultural object - is the inevitable consequence attached to and flowing from labour.

(Shanks and Tilley 1987, 30)
They further explicitly link objectification, human agency and material culture with the process by which the created object acts back and influences the practices of individuals and society (Shanks and Tilley 1987, 132). Objects signify the structured actions, practices and societies from which they were created but do not provide a direct reflection (Jordan 2003a). Instead Shanks and Tilley (1987, 131-133) argue that objects act back and provide a medium for restructuring society. It is this ability to ‘act back’ that has been labelled as object agency.

Although this research will not solely deal with objects, agency has been attributed to materials in a range of contexts including monuments, artefacts, and within the environment or landscape. For this reason the suggestion of material agency should be considered if we are to understand materials. Tilley (2007) has developed this understanding of objectification and object agency within a definition of materiality that incorporates these ideas and attempts to overcome some of the criticisms of the concept of materiality itself. In aiming to provide a general and conceptual framework to understand how objects and materials influenced human behaviour, Tilley considers the affordances and constraints things offer people and the recursive relationship between people, things and the material world. More broadly this involves how things and materials enabled, empowered, and constrained people’s lives beyond a deterministic understanding. To study the materiality of an object or material, for Tilley, involves situating things in relation to people, society, landscapes, worldviews and other objects as well as considering the biography, meaning and significance of objects. Within this approach Tilley (2007, 19) considers
agency to be one of the key aspects of the materiality of objects. An object with agency, he suggests, provides affordances and constraints for thought and action.

Like the previous approaches reviewed here, Latour rejects the understanding of things as mute and inanimate in the face of the ‘talkative’ human mind, as part of a wider criticism of the dichotomy between nature and culture (Latour 1999, 141). However, where Gell suggests that we infer that objects embody human agency, Latour offers a different approach seeking non-human agency. Latour situates this material agency within a network of relationships so that the ‘prime mover of an action becomes a new, distributed, and nested set of practices whose sum may be possible to add up but only if we respect the mediating role of all the actants’ (Latour 1999, 181). It is this network of agents and the relationships between them that is important, rather than a singular origin of action. Miller (2005, 12) argues that this approach breaks down the division of subject and object and brings material culture away from being considered as a static representation of society. Drawing on work by Latour, Miller (2005) offers an understanding of material agency as existing in situations where objects cause effects and have consequences for people that are autonomous of human agency. For example, an engine that fails to start, causing a person to be late for work, can be said to have agency as it is the cause of what later happened. Whilst this approach does not seek to apply a ‘layer’ of agency to objects, Miller (2005) does recognise that the historicity and creativity behind artefacts is an important part of their role in habitus and that these aspects of objects are lost in Latour’s approach.
While not denying that artefacts have effects on people, Gell (1998), discussing art specifically, has argued that rather than considered to be emanating from objects themselves these effects should be understood as being intended by a social agency. Gell suggests that we infer that artefacts, as the creative products of a person, embody distributed human agency. This manifests as the effects of that artefact and influences others. What we might discuss as material agency is something Gell would argue we imagine or understand as distributed social agency. Gosden has drawn upon this approach to discuss material culture and the agency of objects in terms of affects, aesthetics and value (2005a, b) and while his work, and that of Gell, retains a distinction between subject and object, there is an impression of the connected and mutual worlds of human identity and the meaning of things.

Ingold (2007), however, has expressed unease with the concept of object agency as reviewed above, and has criticised theories of materiality. Rather than draw from the material properties/qualities of things, Ingold (2007) argues that material agency has been described as additional to objects akin to animism in that both reference a ‘soul’ added to the material, that animates an object (Pels 1998). Although this approach acknowledges objects as powerful this has been criticised by Ingold for still seeking to identify something additional in objects rather than consider their material components to be the animating factor (Ingold 2007, 12). In this way neither the approaches to object agency reviewed above, nor a standard anthropological understanding of animism allows for a consideration of active materials and how they may have been understood. Instead Ingold (2007) suggests that the agency we seek to apply to objects is in fact drawn from their materiality.
Instead Miller (2005; Borgerson & Miller 2009) suggests that an understanding of materiality begins with the recognition that people emerge in relation to material culture in contexts constituted through practice and culture. This affords a role to material culture, however, while this argument explores the relationship between human and material spheres, it repeats the assertion, rejected above, that inert matter exists only as a passive resource waiting to be acted upon ref. Material culture is discussed as matter objectified into object; matter transformed by human action or social practice which only then has any ability to act. To overcome this continued division between mind and matter it may be more fruitful to employ a relational understanding of agency, which does not advocate that artefacts have autonomous agency but sees objects as enabled to act by virtue of their relations with humans. In adopting such an approach however, the central integrity of an object, thing or material can be lost amongst relational webs of meaning (Olsen 2010, 156 but see papers in Alberti et al 2013).

3.3 Defining materials

An alternative to theories of materiality involves abandoning the concept and shifting our focus from objects to materials themselves. Definitions of materials, and ideas of how we should study them, have however, varied. A scientific view, for example, might describe materials in terms of technical and chemical properties, and the physical processes and forces involved in their manipulation. Contrastingly, for Gosden (1999) materiality is closely bound up with history and, in trying to define the material world, he has suggested there are two components; landscape and artefacts.
This division is, in part, based on the ‘long term, stable nature of landscape… [which is]… more likely to change slowly than mobile material culture’ (Gosden 1999, 152). This division is especially problematic for this research as there seems to be no place for the other parts of the material world considered, such as air, wind, rain, frost, fire, and smoke, all of which might feature in a discussion of elements and can be argued to be part of the material world. Gosden (1999, 152) himself notes that the division is imperfect, for example, permanent built structures would challenge his breakdown of the material world. These two categories then, and the criteria upon which they are based, make this understanding and definition of the material world unworkable.

In contrast Ingold (2007) has sought to reverse the emphasis on materiality and agency by raising materials, from their designation as inert matter waiting to be transformed into meaningful objects, to substances within a flow of transformations, engagements and interactions with their surroundings. Ingold (2000; 2007) suggests that both people and materials are caught up in temporal rhythms [fluxes] within which relational engagements bring about transformations and changes in the properties and form of materials. Using the analogy of basket-making, Ingold (2000) describes the form of the artefact as growing from the shared, dynamic, mutual involvement with the maker in a ‘form-generating process’. We only make things if we engage, interact and transform materials in a continuous mutual involvement: ‘[m]aking… comes to and ends with the completion of a work in its final form, weaving continues for as long as life goes on – punctuated by the appearance of the pieces that it successively brings into being’ (Ingold 2000, 69).
This approach to materials has repeatedly drawn on Gibson’s (1979) division of the inhabited world into substance, medium and surface to discuss the material world and the existence of people within it (e.g. Ingold 2000; 2002; 2007; 2009). Gibson suggests that media, such as air, allow movement and facilitate our senses. Substances, such as stone and wood, are solid, generally opaque, and a barrier to movement. Where these two meet are surfaces; interfaces that separate one kind of material (such as stone) from another (such as air). The use of the term substance has however been challenged by Conneller (2011) due to the historical specificity of its meaning. In Aristotelian thought raw untamed matter must have a ‘Form’ imposed on it to create a substance. The substantial form of a material is the essential nature of that material and its qualities are considered part of the essence of that substance (Deleuze and Guattari 2004, 373). Alongside this, the accidental form of a material is the properties that are peripheral to the core essence. The properties of a substance can therefore come and go, meaning the substantial form, or essential nature, of a material can exist apart from them (Conneller 2011, 5).

The legacy of this philosophical work has created an understanding that the essence of a substance was considered beyond the properties with which humans engage. During the 17th century scientific revolution, this division between substantial form and accidental form became understood as a gap between what we perceive and reality, between what is, and what seems to be (Conneller 2011, 5). Miller (2005) has suggested that a similar concept can be found in many religions. Hinduism for example, is centred upon the illusory nature of material culture with truth coming from the ability to transcend this illusion: materiality is understood as that which is
visible, behind which is the core reality ref. This distinction has contributed to ideas that a deeper meaning lies beyond an object in itself and the division between mind and matter discussed above.

Alongside the problem outlined above with the use of the term ‘substance’, this philosophical inheritance also challenges the distinction between qualities and properties. Gibson’s tripartite understanding the world (as described by Ingold 2007) does however offer one way in which we might overcome the division of the mind and the material world. The identification of materials as facilitating action, and active interfaces where two materials meet, takes us away from considering an external material world. Instead processes and transformations occur in a shared material environment that constantly unfolds, where materials arise rather than are static and fixed ref. People are placed within an ‘ocean of materials’ ref with page nos. Within this model both people and materials are in flux with active properties emerging in different contexts and interactions.

3.3.1 Properties

As discussed above, Ingold’s criticism of Pels’ use of a conventional understanding of animism involved a rejection of the need to identify a separate animating principle in things. Rather than object agency, Ingold (2007) argues that it is the active properties of materials that should be explored in our studies. It is these properties that are caught up in the interactions and processes that break up and regenerate beings and objects and result in things and materials having effects. Boivin (2004, 67) similarly argues that the social meaning and value of a material is influenced by its
physical properties. While technical studies of materials have long sought to measure the properties that were exploited by, and that limited, human manipulation of their form (e.g. Domanski & Webb 1992; Bergman 2008), the properties they seek to measure are presented as essential to the material and universally accessible (Conneller 2011, 9-11). This sort of analysis does not convey the fact that the properties of a material are not all evident at once. Properties do not appear in the same state in all conditions. Ingold (2007, 12) gives the example of clay; pliable when damp, brittle when fired. It is assumed that a scientific analysis of a material within a laboratory will encounter the same properties of that material as people in different contextual and social environments. To simply measure and list the properties of materials out of context and away from the multitude of interactions occurring in a wider social context and environment, is informative perhaps, but does little to help us get at how the significance of materials or how they were understood.

However, whilst this may be true for the mechanical and chemical properties of a material, it is through sensory perception and practical engagement that knowledge of materials is gained (Ingold 2007). Different properties arise out of the personal interactions between people, material and medium in contextually specific environments. The significance or importance of different properties, be they mechanical or otherwise, is similarly dependent on context and personal interaction. For example, for the Cuebo Indians of the north-west Amazon, it is the power of quartz to trigger the metamorphosis of lay person to shaman that is seen as its most important property rather than any mechanical aspect we might measure (Pearson 2002: 142; Reynolds 2010, 90).
Like Ingold, Tilley (2004) has tried to move beyond objective description by exploring the properties of stone in different conditions. However, his work still implicitly makes a distinction between human and material worlds, between symbolised and physical experience (Jones 2012, 9). More recently, Cummings (2012) has adopted Ingold’s suggestions regarding the active, relational and processual nature of materials but argues that this approach can be used in conjunction with a consideration of animistic ontologies (see Reynolds 2010 for a wider discussion of the use of animistic perspectives in archaeology). Within an animistic world view humans and animals are conceived of as different in form, but not in essence (Viveros de Castro 1998, 478). Cummings (2012) suggests that this belief in underlying spiritual unity can be extended to substances, materials, things and objects. Although different in form, Cummings argues that they may have been thought of as animate with a central essence. This underlying essence is argued to have been key to how materials were understood in combination with associations drawn from their origin and properties.

It is important at this point however, to consider the difference between properties and qualities of materials, particularly in light of the historical distinction between objective and subjective aspects of materials. A simple distinction that can be made is that properties can be analysed whilst qualities are subjective. Pye (1968) describes this difference as between those aspects of materials that are measured and tested and those that are perceived by people. Ingold (2007) goes further, suggesting that properties are ‘real’ and of matter whilst qualities are subjective and projected onto
matter. It may seem then that qualities should form our focus when discussing the relational significance, meaning and understanding of materials however, Conneller (2011) argues that this distinction has long established a division between ‘real’ properties and ‘cultural’ qualities that has influenced the way materials are studied (see also Fraser 2010). Instead of studying qualities of materials, Ingold (2007) argues that rethinking how we discuss properties is the key to thinking about materials. Rather than being fixed and objective Ingold argues that properties are relational and known through practical experience in specific social contexts. Not all properties of a material are evident at once and within a world of materials different properties will be enhanced and emerge as materials are caught up in changing environments and a variety of interactions (see Cobb 2008 for a similar discussion).

Whilst agreeing with much of Ingold’s (2007) argument regarding materials, Cummings (2012, 30) disagrees with making a distinction between properties and qualities of a material, instead suggesting that the words are inter-changeable and describe the same thing; the characteristics of a material. Cummings, Conneller and Ingold are trying to reach a similar point: different attributes of materials will arise in different engagements and different contexts. However, to ignore the history of thought that has aligned a separation of properties and qualities with the dichotomy of mind and matter glosses over a problem that archaeologists have been challenged to overcome. Ingold (2007) both advocate an understanding of properties that encompasses both the processual, mechanical attributes of a material and the contextually specific understandings of those properties, whereas Conneller (2011) suggests that contextually specific understandings of materials are the ‘real’
properties, it is from these perspectives that this thesis most explicitly draws in developing a material approach.

3.4 A Material Approach

Tilley’s (2007) approach to materiality, described above, is to understand how objects and materials influenced human behaviour and how they enabled, empowered, and constrained people’s lives. To study the materiality of an object involves situating ‘things’ in relation to people, society, landscapes, and other objects as well as considering biography, meaning, and the significance of objects. Although it may seem that a study of materials as envisaged by Ingold can achieve similar aims, Tilley (2007) rejects the idea that studying the relational properties of materials can get at the meaning and significance of artefacts (made materials) or ‘encountered’ materials (unaltered) and their relationship with people. The effect of materials on people, Tilley argues, would be sidelined by a focus on materials alone. Although both Ingold and Tilley agree that properties of materials are relational and processual it seems that their definition of materiality and what it allows us to think about is important in determining to what degree they value the focus on properties of materials.

However, to attempt to replace one all-encompassing framework, (the materiality of objects) with another (the properties of materials) closes off an avenue of interpretation for a past we acknowledge as complex and variable. As Conneller (2011) has outlined, there is place for both of these in a framework for studying the complex processes and interactions between materials, objects, and people. If the properties of materials are relational, and influence engagements with, and
understandings of, materials and objects, then the study of properties is important in understanding relationships between people and materials in terms of effects and practices: the materiality of things.

The example of the Cuebo Indians discussed above, who value quartz for its ability to trigger the metamorphosis of lay person to shaman, highlights a problem that Conneller (2011, 14) identifies with maintaining a focus on active properties. How does a processual and relational understanding of materials allow for this different understanding of quartz? In answer Conneller (2011, 14 – 16) draws on work that has questioned the division between concept and thing (Henare et al 2007). This approach seeks to identify mechanical properties and cultural qualities as combined in a third thing. Applied to the example of the Cuebo Indians the stony properties of quartz and transformative power are combined to make a ‘powerfully transformative stone’ in a contextually specific understanding. For archaeology to attempt to collapse this concept / thing dichotomy Conneller (2011) suggests that our task is to identify the transformations and processes that combine concepts and properties of materials.

Rather than study an object in terms of its form, function and decoration alone, we should look beyond its current state to the materials, transformations, combinations and active engagements that have brought it together and through which properties have emerged that act to recreate and generate understandings of the world. This echoes ideas expressed by Pollard (2004) who suggests that instead of seeking to discover what objects or materials represent our work should focus on the processes
they are involved in. This approach involves a deeper consideration of biographies, as already proposed for objects (Kopytoff 1986; Gosden and Marshall 1999).

However, whilst biographical approaches to artefacts have moved us away from purely typological studies they have not encouraged a study of materials. The story of an artefact too often begins with the fully formed object and the materials and manufacture are often lost in a tale of decoration, exchange, use, deposition or any of a range of social interactions. The properties of these materials in different contexts, during a range of engagements, and the influence of this on their use and understanding, are part of not only a place, structure or object, but the cosmological knowledge that both produced and was generated by this web of practices within a world of materials.

In the next section I want to draw upon the theoretical approaches presented here whilst considering how materials may have been understood in the light of cosmologies. It is through an investigation of the use of materials that we can begin to consider the culturally-constructed understandings of things and places and the worldviews that were created and sustained through practices and people. Following a discussion of the relationship between materials and cosmologies I will go on to examine this more explicitly in relation to interactions with wood, fire and water in chapters four, five and six. Two case studies of a late Mesolithic shell midden (chapter seven) and Neolithic occupation activity (chapter eight) allow for these concepts to be worked through in relation to the complex interactions and intersections between materials and people in the world.
3.5 Elements in Cosmologies

From the great being springs thought (*manas*)… thought is then the origin of the elements. From it comes ether, from ether wind, from wind fire, from fire water and from water earth

(From an ancient Indian creation story, Gombrich 1975, 123-24).

By studying changes in the uses of materials across the Mesolithic – Neolithic transition in Britain, it may be possible to trace changes in the way they were understood. As the previous section discussed, processes and transformations involving materials are socially specific and act to both reproduce and create understandings of the world. A change in the way materials were used may therefore reflect, and contribute to, a change in how they were understood within different worldviews. This analysis will offer a new perspective on the Mesolithic-Neolithic transition and move away from the problematic dichotomy of approaches outlined in chapter two (section 2.8). This will in part involve looking at similarities and differences in the way materials were treated, but will also involve discussions of how people understand and engage with the world in which they live, in relation to cosmologies.

The topic of elements has only been touched on with regards to British Prehistory (*e.g.* Richards 1996; Brück 2011) although individual materials have been considered in greater depth (*e.g.* Fowler & Cummings 2003; Tilley 2004; Noble 2006; Gheorghiu and Nash 2007; Kaliff 2011). Given the discussions above it is important to breakdown our definition of elements to an understanding that is more useful when
considering prehistoric cosmologies. How we define elements today, and how we categorise them, have obvious implications for how we interpret the past. Within western thought water, fire, earth and air are considered the four elements. Rosemary Wright (1995) has described how Ancient Greek philosophers considered the four elements to be ‘unchanging entities that formed temporary arrangements’ (Wright 1995, 99). The elements were thought of as the basic building blocks of the world, for example air and fire were thought to combine to form ‘the breath of life’.

This understanding of elements as the building blocks of the world was reflected in a number of models for the composition of the cosmos. The idea that the cosmos was the shape of an egg features in Classical literature such as the Roman texts of Varro (Dronke 1974; Fig. 3.1). The comparison of the universe to an egg echoed general beliefs that the four elements were arranged in four physical layers according to weight. Earth and water were considered the heaviest with air and fire the lighter elements (Simek 1996). Its popularity persisted as late as the 12th Century; an egg-shaped image of the cosmos features in the illuminated manuscript Scivias, written between 1141 and 1151, by Hildegard of Bingen who describes layers of fire, ether and water surrounding the globe which is itself made up of four elements (Fig. 3.1; Simek 1996, 21). Hildegard was not alone in favouring this model. In a popular encyclopaedic work produced c. 1120 Honourius of Autun, compared the composition of the universe to an egg and wrote of the creation of man from the four elements, suggesting that the make-up of man represented the universe in microcosm (Edson 2007). These were not new ideas but, reflected widespread and longstanding
beliefs about the composition of both man and the cosmos from four elements and their interconnected relationship (Chenu et al 1997, 33).

The understanding that human beings were composed of the four elements extended to theories of health and wellbeing. In a later work, *Physica*, Hildegard of Bingen recorded the central properties of the elements and their medical uses. Each element was suggested to affect human beings in different ways based on specific characteristics of each (Table 3.1; Flanagan 1995). Following the material approach outlined, the repeated experience of the four elements would have contributed to these understandings and reaffirmed their place in knowledge. Whilst advances in science have changed our understanding of the universe and the human body, ideas of the four elements and their characteristics have persisted, particularly in relation to health and well-being. It would be easy to assume that these four materials in particular might have been of significance in the past and that they were perceived to hold the properties that they have historically been ascribed, this thesis seeks to challenge this notion by exploring non-western cosmologies.

<table>
<thead>
<tr>
<th>Element</th>
<th>Characteristics</th>
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<tbody>
<tr>
<td>Earth</td>
<td>Cold, Dry, Blunt, Immobile</td>
</tr>
<tr>
<td>Water</td>
<td>Cold, Wet, Blunt, Mobile</td>
</tr>
<tr>
<td>Air</td>
<td>Hot, Wet, Blunt, Mobile</td>
</tr>
<tr>
<td>Fire</td>
<td>Hot, Dry, Sharp, Mobile</td>
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*Table 3.1 Characteristics of the four elements (after Simek 1996, 101)*
Figure 3.1 Top: Image of the cosmos from *Scivias* by Hildegarde of Bingen. Bottom: Illustration showing two versions of the egg model of the cosmos (after Simek 1996)
3.6 Cosmologies and the world

Belief systems often explain the origins of the world and the creation of people. Rather than seeking to uncover an overarching cosmology, I am interested in the use of materials and the material expression of cosmological ideas through practice. Cosmologies are not external to actions but are materially grounded through the use of materials (Jordan 2003a, 97-99). As discussed earlier in this chapter, it is through the study of the trajectories of materials, the different properties that emerged in different contexts and interactions between people and materials that we can think about the cosmologies or worldviews that may have been materialised in the deposits and objects we encounter.

Gosden (1999, 153) suggests that cosmologies describe the origins of human beings and their morally correct place within the physical structure of the universe. In this way they relate physical properties of materials with the moral consequences of both physical and social relationships. Gavin MacGregor (2008) has suggested that these associations were key in relating cosmologies to the world people inhabited. Within cosmologies, elemental materials are often emphasised as the building blocks of life, being understood as the basic components of the world in which people lived. An ancient Vedic ceremony involves the construction of an altar from materials that represent different parts of the original being from which the cosmos was created (Kaliff 2007). For example, clay bricks combine earth and water to represent the flesh and skin, and a layer of grass represents the hair. The bringing together of these different materials, together with preparatory practices such ploughing and sowing
the land, reproduces the bringing together of elements in the creation of the first being and the cosmos (Kaliff 2007).

Elements are considered as potent and connected to the creation of the world, with the ability to create, transform and destroy, and to undergo or catalyse change. This concept of elements as building blocks of the world is echoed beyond western philosophy and Reynolds (2010) states that the majority of animistic, perspectivist, totemic, and shamanic societies identify particular elements in the structure of the experienced world. In eastern Siberia, a myth told that the gods had built the heavens from stone, but the human beings became afraid that they would fall down and so the gods blew air under the heavens to hide it from human view (Couprie 2011, 213).

All of nature, including humanity, is understood as being built from certain elemental materials and in many cases understood as eventually returning to this state (Richards 1996b; Tuan 1974: 18-23). Mongolian tribes with the Lamatite religion believe that the deceased must be returned to one of five elements: fire, air, water, earth or wood. The priest decides which of these it should be by interpreting signs in the sky (Schlette 1991). A similar return to elements is associated with death in Vedic hymns and ancient Iranian texts where specific parts of the body are identified with parts of the cosmos, for example, life-breath/wind and blood/water (Lincoln 1986).

Ingold (1986) suggests that amongst circumpolar forager societies there is a common concept of a three-tier division of the universe. Each tier can be related to parts of the
inhabited world: the upper world is connected to the air and sky, the middle world, inhabited by humans, corresponds to the land and a lower world of the dead is associated with water. For the Khanty of western Siberia, this three-tier division of the universe can also be related to certain characteristics and parts of the landscape; the lower world is connected to the cold, the dark and the north while the upper world relates to the bright, the warm and the south (Chernetsov 1963; Jordan 2001; 2003). The flow of many rivers from south to north, and therefore towards to the lower world, is linked to the Khanty belief that human souls travel downriver after death, and burial in a canoe is traditional for groups in the area (Chernetsov 1963). Disease and illness are thought to flow upstream, from the north, or upwards from the earth (Chernetsov 1963).

These beliefs about earth, water, rivers and the landscape are born from a worldview that guides understanding of both the lived world and social practice, the creation of material culture, and group identities (Jordan 2003). Within the landscape, the location of different sites is guided by this cosmology. Sacred places, such as the holy sites where guardian spirits live, are always upstream from a settlement and graveyards are always downstream to prevent the illness of the dead flowing into the settlement (Jordan 2003, 133). Similar beliefs govern the construction of new houses and settlements, which must always be built upstream from existing structures. This can range from a settlement shifting kilometres upstream to the rebuilding of a house just a few metres upstream. This results in a pattern of social reproduction through the creation of material culture (Jordan 2003a). At certain times gifts must be given to the spirits and journeys undertaken to specific sacred places in the landscape. A senior
water spirit (*Viu Al*) is thought to reside in the main river in deep whirlpools and at the riverbank. As well as making water travel safe *Viu Al* is believed to drive fish up the tributaries for hunters. Each spring as the ice breaks, prayers are said at the shore and gifts deposited into the waters (Jordan 2003, 140; 2008, 236). Beliefs and cosmologies are grounded in the way material culture and the world are experienced, understood and engaged with.

These ethnographies present a radically different way of thinking about how people engage with the material world through interactions with the properties and effects of materials. This echoes Ingold’s account as discussed above in section 3.2. This approach will be drawn upon in this thesis but before doing so it is important to consider how archaeologists have previously conceived of elements.

### 3.7 Elements in archaeology

The widespread occurrence of the concept of elements has seen it applied to a variety of archaeological contexts. Colin Richards, when discussing the elemental in the late Neolithic, describes elements as the ‘basic constituents of the experienced and conceived world’ (Richards 1996, 314), suggesting that they were recognised as ‘basic components in the creation of the world’ (Richards 1996, 316) and played a fundamental role in belief systems. Drawing on ethnographic analogies Richards further suggests that elemental materials can be particularly potent symbolising destruction, transformation, rebirth and transcendency.
Gavin MacGregor (2008, 270) has discussed elemental forces and has suggested that physical changes in materials may have been perceived as evidence for symbolic or metaphoric changes. The ability to execute such transformations may have been perceived as one that involved wielding significant elemental powers as much as any technical knowledge or craft skill (MacGregor 2008). Practices that involve change in the character of the material or object are distinctive in that they do not simply change the appearance of the material, for example weaving of a basket from grasses, but change its form, such as the working and firing of clay into ceramic objects. While this perspective puts emphasis on the transformative power rather than material it is useful in highlighting the links between the character of materials and how they are understood. Changes and transformations in these materials may have altered how they were perceived.

Rather than affording materials active power, MacGregor highlights transformational processes as being driven by elemental forces. This is perhaps due to a focus on fire in his work but it raises an interesting division between physical materials, such as wood and stone and ephemeral materials such as air and fire. The distinction between elemental materials and elemental forces attributes the same characteristics to different aspects of the world. In Ingold’s discussions on materials (2000; 2007) he frequently invokes Gibson’s tripartite division of the world into substance, medium and surface. Fire and air would be classified as media within this model whilst wood, water, earth and stone would be labelled as substances. In considering elements, how useful is this distinction? In relation to prehistoric cosmologies, both Richards and MacGregor use the same language and terminology to discuss elemental forces and
materials and I would argue that both can be studied using a material approach. As a result in the following three chapters I explore ethnographic examples of how wood, fire and water are perceived and how this affects engagements with these materials.

As detailed in chapter one the choices of wood, fire and water relates to their prevalence in the lives of people around 4000 BC which may have meant they were important, or central, within the cosmologies of communities at the time. These materials have also been less intensively discussed in archaeological literature than stone, which is more durable and as such more tangible today. As chapters four, five and six demonstrate however, understandings of wood, fire and water can also be explored through the detail of activities and interactions in which these materials were encountered. Using the approach outlined within this chapter I consider ways in which we can rethink our knowledge of interactions with wood, fire and water, in the late Mesolithic and early Neolithic of Britain. How people engaged these materials can tell us something of how they were understood and their place in cosmological schemes. In order to move from ethnographic illustrations to discussions about prehistoric Britain I consider a number of specific examples of archaeological evidence including objects, architecture and traces of interactions between people and materials. By considering these different encounters it is possible to consider the experiences that may have been afforded and the complex ways in which wood, fire and water were understood and remade through action.
Chapter 4: An Everyday Encounter: Woodlands, Trees and People

To dwellers in a wood almost every species of tree has its voice as well as its features. At the passing of the breeze the fir-trees sob and moan no less distinctly than they rock; the holly whistles as it battles with itself; the ash hisses amid its quiverings; the beech rustles while its flat boughs rise and fall. And winter, which modifies the note of such trees as they shed their leaves, does not destroy their individuality.

(Hardy 1978 [1832], 39)

Woodlands and trees are likely to have been common features within the lives of communities around 4000 BC and, as Whittle et al (1999) argue, were not an ecological backdrop but were ‘something to live within and think through’ (Whittle et al 1999, 384). It is likely that woodlands and trees played a role in the myths, worldviews and values of late Mesolithic and early Neolithic communities and that this influenced how wood was used and understood. Noble (2006), whilst discussing the importance of large wooden posts to early Neolithic communities in Scotland, suggests that their significance was not tied up to their functional use but ‘due to the symbolism that many different cultures across the world attach to trees’ (Noble 2006, 94). Although this thesis aims to think about materials, including wood, more broadly than their economic value, the practical uses of materials in everyday lives
should not be ignored. It is in these day-to-day uses and activities that conceptualisations of trees and wood were (re)created through the interaction of cosmologies, people and materials. Rather than thinking of symbolism as something ‘attached’ to trees, this thesis argues that it was the relational process of engaging with trees as people moved through woodlands sensing, making, using, remembering and knowing, that both constructed and renewed worldviews, and created spaces within the landscape through the practices of everyday life, (after Ingold 1993, 2000; O. Jones 2011).

In order to think about how interactions with trees and wood may have been understood, this chapter explores ethnographic accounts of how trees are perceived and how this affects the use of wood. These insights are intertwined with specific examples from the archaeological record that provide detail of the use of wood and encounters with trees in the late Mesolithic and the earliest Neolithic. The construction of architecture, creation of objects and interactions with woodlands are all explored from a material perspective to offer new possibilities and interpretive narratives. The complex and multi-faceted way in which woodlands, trees and wood were used is argued to reflect a similarly varied role for these elements in cosmological schemes.
4.1 In a woodland environment

At the dawn of history Europe was covered with immense primeval forests, in which the scattered clearings must have appeared like islets in an ocean of green.

(Frazer 1922, 94)

If we are to discuss the trees and woodlands with which people interacted and explore how wood was perceived, then it is important to consider palaeo-ecological evidence to understand the character and form of prehistoric woodlands. Few comparable types of woodland exist today but analysis of environmental data, such as wood charcoals, fungal spores and pollen records, can suggest a possible reconstruction. There are some problems with these methods and it has been suggested that these techniques do not provide enough accuracy to discuss woodlands within prehistoric landscapes in anything more than generalised terms (Tilley 1994, 73). For example, pollen can travel great distances and can only demonstrate that there were trees somewhere. It is also difficult to discern details from this data, such as how dense, tall, mature or healthy a forest was (Moore 2003). The focus of environmental reconstructions has also been criticised; Price (2005) argues that palaeo-ecological studies have failed to engage in discussions of how individual trees, with their different qualities, were experienced, despite the fact that different species of tree are regularly identified. In response to these criticisms, new methodologies have incorporated contextual and interpretive approaches to produce more nuanced reconstructions of local environments (e.g. B. Taylor 2011).
Debates surrounding the character of Mesolithic woodlands begin with a long-standing misconception that by 4500 BC solid woodland covered Britain with the exception of extreme fringe environments (Rackham 1986; Peterken 1996). This characteristic view presents Mesolithic Britain as a foreboding place, dominated by dense walls of dark, impenetrable forest. The threatening imagery provides a suitable stage for the ‘barbaric’ narrative discussed in chapter two (section 2.1), reinforcing the stereotype of Mesolithic communities living at the mercy of nature. An antagonistic relationship is established between dense forests and human activity, with the two apparently unable to occupy the same space resulting in reconstructions of the landscape that feature an ‘either/or’ approach to space (Tipping 1994). More recent work has however, rejected the model of a dense, closed canopy and debate has centred on the degree to which the late Mesolithic landscape was open or closed (e.g. Edwards and Ralston 1984; Harding and Rose 1986; Tipping 1994; A. L. Davies and Tipping 2004). Frans Vera (2000) has questioned both the idea of a dense, continuous canopy of forest across Europe and the ‘unaltered’ state suggested for these woodlands. In particular, Vera has criticised the interpretation of pollen diagrams and has suggested that a pre-expectation of dense forest has influenced the reading of the data (see also Tipping 1994, 17; Whitehouse and Smith 2004).

Vera (2000, 9) instead presents a model of the environment that is more akin to woodland pasture or parkland with a mosaic of large and small grasslands, scrub, solitary trees and woodland stands. To explain this level of openness Vera (2000) calls for a reconsideration of the disturbances identified in the palaeo-ecological
record in light of a range of agents, although this is not carried through into his analysis. The effect of grazing animals in woodland environments has been discussed extensively in the literature (e.g. Buckland and Edwards 1984; Bradshaw and Hannon 1992; Bradshaw and Mitchell 1999; M. Robinson 2000b) and grazing by large herbivores is argued by Vera (2000) to be the key mechanism in the creation and maintenance of clearings and the differential regeneration of vegetation in this more variable and open landscape.

Whilst Vera’s (2000) proposed model challenges the ideas of dense forest and clearance only occurring by human action, it does generalise across Europe throughout the Holocene and assumes all species of large herbivore are evenly distributed across the landscape (cf. Rackham 2003). This is especially problematic in Ireland where large herbivores were absent in the early Holocene (Whitehouse and Smith 2004, 205). The role of other factors that might affect the structure of woodlands is also not considered; these could include wind-throw of trees, dead trees and wood, peat formation, changes in soil chemistry, pest attack, climate change, flooding, storm damage and fires, all of which are known to have been active within these forested environments (Zackrisson 1977; Patterson and Backman 1988; Tipping 1994; Whitehouse 2000; Bradshaw et al. 2003).

Vera is not alone in neglecting these factors; although they have been discussed, more prominently and frequently the disturbances seen within pollen profiles have been argued to be the result of deliberate activities by Mesolithic and Neolithic communities (e.g. Evans 1975; Simmons 1996). This has particularly centred on the
deliberate creation of clearances using fire. The practice is considered further below (section 4.3) but is noted here as a focus of research. Whitehouse and Smith (2004, 204) have suggested that there has been too strong a focus on the actions of people in the literature despite the identification of non-anthropogenic causes (e.g. Bennett et al 1990; Bradshaw and Hannon 1992; Whitehouse 2000).

During a review of evidence on the decline of woodlands in Scotland, Tipping (1994) similarly highlighted the often overlooked evidence for natural causes for disturbances identified in the environmental data. For example, periods of climate change have been suggested to have caused variation in the numbers of Pine trees in the Cairngorms (Dubois and Ferguson 1985) and soil erosion has been argued as the cause of disruptions in the populations of birch, hazel and elm in Perthshire (Tipping 1995a). Tipping (1994, 18) has suggested that reliance on evidence of a reduction in tree pollen, an increase of herbs and an increased amount of charcoal is insufficient to suggest deliberate human action. Greater temporal precision and spatial resolution are argued to be key to distinguishing between natural events and deliberate human action, with abrupt, small clearances more likely to have been caused by the latter (Tipping 1994, 36). There is a third option. Brown (1997) has suggested a more subtle model in which clearings created by non-anthropogenic causes were used opportunistically by Mesolithic groups resulting in the maintenance of open areas and the environmental signature identified in the data. Some have identified this as a ‘least-effort’ model (Moore 2001, 221) however this reduces Mesolithic actions to a question of labour and time.
 Nonetheless the data reviewed by Tipping (1994) seems to support the model of a
mosaic landscape in Scotland (Fig. 4.1; also see Edwards and Ralston 1984, 24;
Moore 1997) and similar variety has been established elsewhere. Studies examining
data from chalk grasslands in the Yorkshire Wolds for example, have indicated that
there were open grasslands throughout the Holocene (Bush and Flenley 1987; Bush
1988; 1989). Investigations on chalk downlands in Dorset have produced models that
suggest a pattern of dense woodland coverage that was increasingly cleared over time
for settlement and agricultural use (e.g. Allen 1982; Scaife 1982; Barrett et al 1991).
However, the use of new data with finer chronological precision from both
archaeological sites and carefully chosen off-site locations allowed French et al.
(2005) to challenge this model and present a Mesolithic landscape on the chalk
downlands, which in some areas included areas of woodland and elsewhere featured
large areas of open grassland that were managed by livestock grazing.

These examples should not however be taken as indicators that large areas of open
grassland existed across Britain. Using pollen data and fossil beetle assemblages from
across Britain Whitehouse and Smith (2010) have suggested that the early Holocene
(9500 – 6000 BC) featured a high degree of variability in amounts of woodland and
open ground. After 6000 BC however, Whitehouse and Smith (2010) report an
increase in woodland and a decline in markers for open areas. Contrary to Vera
(2000), pasture woodland is rejected as a suitable model for late Mesolithic Britain,
although significant local fluctuations are noted suggesting regional variation,
particularly in chalk and limestone areas and river valleys (Whitehouse and Smith
2010, 548). Much of the landscape in Britain however is presented as composed of a series of woodland stands with limited open areas and clearings.

It is important however, to acknowledge that there would have been great variation locally in the density and composition of woodlands due to differences in aspect, altitude, soil type, soil quality and microclimate (Tipping 1994, 11). Each woodland area would have been dominated by one species of tree with a number of subsidiary trees and tall shrubs. The type of trees present in an area, how they interacted, the amount of light and other temporal and spatial factors would all have affected the physical form of woodlands. An area dominated by birch would be lightly wooded while woodland dominated by hawthorn would be dense and close. Amongst these varied stands were openings created by natural and human action and between woodlands, clearings, bogs, flood plains and rivers were edges and fringes of environments that may have been understood in a different way to the areas they bordered.
Figure 4.1 Distribution of woodland types in Scotland (after Tipping 1994; Warren 2005)
These ideas of late Mesolithic woodland paint a more complex and variable picture of the landscapes people would have moved in and around. Knowledge of woodlands and trees, and how to subtly manage different conditions was a necessary and important part of Mesolithic life (McFadyen 2006, 133). Actions and interactions with and around trees form connections between activities in the past, future and elsewhere. In this way, relationships between people and trees are an important part of journeys that articulate the broader landscape for mobile communities in the late Mesolithic and early Neolithic. Woodlands were dynamic and active environments and the everyday lives of people would have been caught up with their structures, forms, rhythms and textures (Warren 2005, 66).

Within different woodland stands the different types of tree, their different flowers and fruit, colours, leaf shapes, size, and form would have been perceptible through a range of sights, sounds and smells. Changing light and weather conditions would add to the complexity and rich detail of woodlands allowing them to be distinct within a local landscape (O. Jones 2011). Areas of tree fall, past clearances, coppiced trees, long-established pathways, places disturbed by wind, lightening, sea-level change, disease, soil change, and herbivore activity will have had a distinct character. A tree itself consists of many elements: a trunk, branches, roots, twigs, leaves and fruits or flowers. These are not static, the form of a tree changes constantly over time, and the distinctive architecture of both trees and woodlands changes with different temporal rhythms. These changes in the experience of woodlands might act to create a sense of time and seasonality; when plant growth on the ground was flourishing, when fruits were in abundance or when new growth reached its most full and blocked light and
movement. These rhythms of change would be shared by those whose lives were intimately connected to trees and woodlands.

Figure 4.2 ‘Mesolithic activity adjacent to a silted up stream channel in a forest clearing’ Reconstruction of the Mesolithic woodland from data collected during excavations for Heathrow Terminal 5 in the middle Thames Valley (© Framework Archaeology based on Carruthers 2010)

4.1.1 Places along the path

Hanunoo farmers of Mindoro Island in the Philippines create open areas of woodland by felling some trees, trimming others and using fire to clear the undergrowth (C.
Russell 1979, 220). A family group then plants fruit trees and practices small-scale agriculture for two years. Following this period the area is abandoned and a new area is cleared as part of a cycle of movement around the landscape, however, the fruit trees continue to be tended for the length of their productive life by the group (C. Russell 1979).

In this example, interactions with trees act to create group identity and places within the landscape. The practices involved in clearing an area of woodland and planting fruit trees create a distinctive space and articulate the wider landscape through connections to other people, activities, places and times. The decision to fell trees will have drawn upon broader knowledge of their place in the world and these social properties would be recreated through action. The return to fruit trees at regular intervals as part of a rhythm of life distinguishes them from other trees (and other crops) and their treatment may be bound up with the provision of fruit, metaphors of re-birth and vitality and their endurance during the lives of the group. Conklin (1957 cited in C. Russell 1979, 220) writes that ‘through time the ownership of perennial crops [almost exclusively fruit trees] is the most important link binding Hanunoo swidden farmers to particular parts of the local landscape’. From this C. Russell (1979, 220) suggests that the ownership of fruit trees is the key factor in the move to permanent settlement; the link to places in the landscape is argued to require permanent settlement in that area. Following McFadyen (2006), I would suggest instead that the tending of fruit trees invites a group to revisit particular spaces in a landscape that is perhaps understood as a route or journey rather than place-centred. Through interaction with these trees, cropping their fruit and maintaining the tree,
particular points within the landscape, beliefs regarding fruit trees, and the on-going journey of the group are re-inscribed through practice.

I have previously explored examples of Mesolithic and Neolithic timber architecture and their role in the creation of place (McInnes 2009). Within that discussion, the five early Mesolithic postholes discovered beneath the Stonehenge car park (Allen 1995; Allen and Gardiner 2002) were presented as being part of activities that created a place within the wider landscape through practice. Posts were erected sequentially but in a line, at the site over centuries. The activity may have begun with the tree-fall event that was also identified at the site. This feature had been modified to hold one of the posts (McInnes 2009). The relationship between tree, pine posts, clearing and people not only tells us about practice and space in the early Mesolithic landscape but I have argued that the original tree, and perhaps trees in this area, may have been of particular significance.

For the Saami of northern Scandinavia trees were important markers within the landscape and used to delineate communities, borders and pathways (Östlund et al 2002). The Saami are recorded as having worshipped living trees; these could be carved in the same manner as wooden idols used at sacrificial sites or have offerings placed in hollows cut into the trunk (Bradley 2000, 5-7; Östlund et al 2002). A piece of oak recovered from waterlogged peat deposits at Maerdy, Glamorgan dating to the late Mesolithic (5366-4729 cal BC) shows evidence of deliberate modification (Fig. 4.3). The surviving piece of timber is 1.7m in length and 0.26m wide with a tapered end suggesting that it once stood as a post (Scott Jones 2013). Preserved along one
side of the timber are carvings including chevrons and an oval motif that offer a tantalising glimpse into possible tree or post modification practices and art during the late Mesolithic and earliest Neolithic.

Figure 4.3 Oak timber found in peat deposits at the Maerdy Wind farm site, Rhondda, Glamorgan with illustration highlighting carved areas that have survived. (© R. Scott Jones 2013)

Traditions of modification of important trees have also been recorded in the Pacific Northwest coast area and in Australia among Aboriginal communities (Mobley and Elrige 1992; Rohods 1992; Eldridge and Stryd 1993). In the New South Wales area of Australia Aboriginal communities carve trees at ceremonial sites (*bora*) and circles of carved trees often mark the burial sites of celebrated men (Fig. 4.4; Black 1941;
Amongst Aboriginal communities of the New South Wales area, the carvings often feature an emblem of the group involved which often include animal symbols. The Gwalan for example, would carve the image of a turtle, a symbol of survival and longevity, on a tree at burial ceremonies to ease the transport of the spirit to the spiritual realm in the sky (Everett 2010, 233).

With regard to the posts erected at Stonehenge it is interesting to note that although carved trees often circle burial sites, they can also be part of ceremonies that are autonomous from practices involving the deceased and can be performed elsewhere in addition to burial practices. Burial trees are carved for each deceased member of the group and ‘gather’ together at a separate ceremonial site (Everett 2010).

When I arrived at the site … I also saw an open space (clearing) for camping and an already burning fire in the middle of the clearing. There were 30 or so Gwalan adults and about 15 children. Adults were engaged in making and drinking tea, preparing food, chatting with each other and generally milling around. Many of the children were busy chasing the numerous Eastern Grey kangaroos … As I approached the site, I was warmly greeted with the usual jokes and teases that I habitually trade with appropriate people and the more respectful greetings that are reserved for senior people. The general ambience was far from the sombre mood that might be expected of a funeral rite. There was a general air of anticipation if not excitement – something was going to happen.

(Everett 2010, 235)
Carvings in trees may outlast those who made the marks and can affect how a tree grows (Warren 2005, 74). This altered growth could perhaps be understood to be a demonstration of specific characteristics or a material expression of a connection to past peoples and actions. The modification of posts can act in a similar manner, as a material trace of engagements between people, woodlands, trees and timber. It is not only through carving that posts may have been marked. Gell (1998, 144–45) describes the navakaevara ceremony of the Puri Jagannath Hindu Cult, India, where a tree-trunk or wooden post is spiritually given life, flesh, blood and sense organs through the application of paint and cloth. The treatment of posts with paint or cloth may have emphasised particular characteristics such as the pattern of bark or the grain of the wood. Cloth may have been used to cover parts of the post, perhaps marks left by the felling process. Through these varied interactions with trees and posts, altered understandings of the transformed materials may have emerged.
Figure 4.4 Carved trees are found at Aboriginal bora sites and at the burial sites of important men. (Photographs taken in the early 1940s by Russell Black. Exhibited by the State Library of New South Wales 2011)
It is difficult to suggest what beliefs may have resulted in the importance of the pine posts at Stonehenge and what practices they may have been accompanied by. However, the replacement of the fallen tree with a post can perhaps allow us to think about how wood may have been understood. The woodland surrounding the site was made up of pine and hazel. It is unknown which species of tree fell to leave the tree-throw feature but all the posts erected were pine. I have suggested previously that the post inserted into the modified tree-throw may have been carved from the fallen tree (McInnes 2009). The relationship between pine posts and trees may not have been one of exact equivalence but may have been driven by an understanding that a tree and its timber are both alive and may have embodied a similar meaning. Both the post, and people involved, may have been transformed through their shared interactions through the processes that converted tree into post.

The insertion of a post into the tree-throw might suggest that the vertical axis held some importance, although the post, estimated to be c. three metres in height, would not have been of a comparable height to the tree whose larger diameter is suggested by the tree throw feature (Allen 1995). Pine trees of the type present in the early Mesolithic can grow, on average, to 30m in height and one metre diameter and individual trees can live for up to 300 years (Mitchell 1978, 170). Allen (1995, 472) has commented that the posts, which were left to rot in-situ, the remains of posts, or an identifiable change in the vegetation would have been visible for centuries. The long intervals between post-raising events may have been tied to an understanding of the lifespan of trees, and the spacing between posts may have been to respect the remains of older posts still tangible within the area. These visible structures may have
provided a focus for activities and been drawn upon as a metaphor for lifecycles, strength, longevity and continuity themes that will be discussed more fully within this chapter (section 4.2).

Practices focussed in this area such as carving, bark peeling, painting, specific movements, consumption, making sounds and acts of deposition, may have drawn on cosmological understandings and the characteristics of trees, and in doing so would have created a sense of place within the broader woodland. Although the later posts were not made from the fallen tree, they may not have been created from trees chosen at random. In many societies, the cutting down of trees or parts of trees can be a highly symbolic act, and must be done in the right way, using appropriate tools, while moving in the correct manner, and involves gift-giving to appease the spirits (Evans et al. 1999; Jordan 2001, 95; Shutova 2006: 320, Reynolds 2010, 107). The erection of further posts in the same location suggests that the original tree held significance and may have stood within a woodland or area that was held to be sacred. Later activities involved in bringing new posts to the site, raising them in place and maintaining the clearing around the posts will have played a continued role in creating social identity, a particular space within the woodlands, and forming connections between places in the landscape.

As I have already touched upon, a large body of anthropological work has shown the many ways in which woodlands and forests are understood; how people engage with trees; and the affordances these environments provide (e.g. Perlman 1994; Macnaghten and Urry 2000; Garner 2004; Tuck-Po 2005). Within an encultured
landscape, trees and woodlands can play a role in the transmission of knowledge or social memory and in the formation of group or personal identities and genders (e.g. Küchler 1993; Austin 2000; O. Jones 2011). Trees have been shown to be bound up with ideas centred on life, human bodies, kinship systems and beliefs. The lifecycle of trees is frequently drawn upon as a metaphor for the human lifecycle and can represent vitality, death, rebirth, and decay (e.g. Bonnemere 1998; Giambelli 1998; Whitehead 2003).

In many societies trees are considered animate and alive, and individual trees can be given names, acquire histories and develop identities (e.g. Ingold 2000; Jordan 2001; 2003; Moore 2003, 141; Shutova 2006; Bacigalupo 2007). These trees can be subject to specific social rules that govern access to and interactions with the tree, its fruits, nuts, roots and leaves (e.g. Leith 1999; Karangi 2008). Trees have been shown to be central to the way many shamanistic groups understand the world and provide a physical representation of the cosmos (Rival 1993; 1998; Reynolds 2010). Specific groves or individual trees can be thought to embody or house spirits as part of wider cosmologies that consider the landscape to be animate (e.g. Jordan 2001; 2003). These ideas offer us a way of thinking about the relationship between trees, wood and people in the past. The examples below, which explore these themes, are provided to open up possibilities, challenge preconceptions, develop new interpretations and offer a different perspective on the material remains of the past.
4.2 Understanding the world through trees and woods

What's the life of a man any more than a leaf?
Life has its seasons, so why should there be grief?
Though in this wide world, we appear fine and gay
Like a leaf we shall wither and soon fade away

Down in yonder churchyard many names you will see
That have fallen from the world like the leaves from the tree
Old age and affliction upon them did fall
And death and disease came and blighted them all

(Traditional English folk song)

4.2.1 Lifecycles, Kinship and Tree/Human bodies

Within each woodland stand, trees of different ages and at different stages of their development would be present. Trees can outlive humans by many centuries and provide a sense of continuity and a metaphor for life continuing through the generations. Those living in a woodland landscape in Britain around 4000 BC may have regarded older, ancient trees as physical, tangible links to past generations. Particular trees may have been given names and become a focus for activities that drew on these past, and future, connections. Carvings, for example, could have persisted and formed a tangible link to past actions and people. In many societies trees are thought to embody ancestral spirits (see below) and mature trees may have been understood as ancestors in themselves.
The symbolic and material connections with the past, ancestors, permanence and vitality have also seen trees understood to be part of kinship systems and family lineages (e.g. C. Russell 1979; Rival 1993). Guardian trees in northern European mythology were said to embody the wellbeing of the family group and the life of the tree (usually close to the house of the family) was considered to be intimately tied to the continuation of the family line (Ellis Davidson 1960, 3-5). Amongst Northwest Coast groups of North America, it was recorded that the chief ‘is a body of a welkw or great cedar tree, and the branches of this tree is the tribe’ (Boas Professional Correspondence: Hunt to Boas, April 11, 1918 cited in Berman 2004, 135). The ‘chief-as-tree’ was said to be anchored by the ancestors who were the roots of the tree (Berman 2004, 135). This metaphor not only creates a visual illustration of the links between ancestors (past), chief (present) and tribe (future) but associates the chief with the strong trunks of cedar trees that support the growing tribe.

Trees can be understood in multiple, and complex, ways. The kinship system of the Rotinise of Indonesia is centred on the concept that lineages and individuals ‘plant’, or give rise to new individuals and lineages. Different sections of a lineage or family group are described as ‘branches’ of long-lived trees and great importance is placed on growing those who are newly planted (C. Russell 1979). This emphasis on the longevity of trees and healthy growth extends to how people are understood. During a name-giving ceremony the following prayer is offered;
…may he [the child] be like a plant, that he may be capable of growing, that he may become tall and have flowers and fruits; his trunk, may it send forth roots and his leaves, may they broaden so that he may grow.

(Fox 1971, 237-38)

As living beings, many societies understand trees as analogous to human bodies. Within Rotinese language the same words are used for blood and sap; for skin and bark; and for hair, lips, ears and leaves (C. Russell 1979, 229). More broadly, the connection between human and tree bodies has been suggested to be due to a shared vertical axis which allows humans to ‘connect more fully and sensitively with the vertical relation between sky and earth’ (Casey 1993, 80). While the shared vertical perspective does lend itself to a comparison between human and tree existence, the example of the Rotinese suggests that the understanding of trees and humans as having similar bodies extends beyond this common alignment.

The Ayurvedic perspective equates parts of the human body to parts of a tree (Fig. 4.5; Frawley and Lad 1986; Ovsyannikov and Terebikhin 1994; Reynolds 2010). The shared properties of the equivalent parts both guide and enhance the understanding of human/tree bodies. Bark is rigid and hard but light, characteristics it shares with bone; softwood and muscle are both more pliable and moist than bone; resin, sap and blood are all fluid as they emerge from the body but dry and harden in the air. It is by experiencing these different properties that the concept of comparable human/tree bodies might develop and a worldview that understands trees as alive and animate might arise.
Figure 4.5 The parts of a tree are equated to parts of the human body within an Ayurvedic worldview (Frawley and Lad 1986, 17 in Reynolds 2010, 109)

Some societies take advantage of these similarities in practices concerning the body; in northern Sweden one tradition involved trees taking on illnesses in place of people. This draws on an understanding that tree and human bodies are comparable, for example, those suffering with tooth-ache would place a splinter of a ‘toothache pine’ into their gum next to the painful tooth. When the splinter was bloody it would be placed under the bark of the ‘toothache pine’ (Östlund et al 2002). The tree was
considered to now be the bearer of the illness. The repeated use of one tree for this purpose both altered its appearance and how it was perceived. If the tree was brought down it was said that all the illness would transfer to any person who had used it (Östlund et al 2002).

As highlighted above, trees provide rich metaphors for lifecycles; after the seasonal shedding of leaves the bones of the tree are left behind resembling a skeleton (Noble 2006; Reynolds 2010), the new growth that follows and the ripening of fruits are signs of fertility, (re)birth and vitality, and the decay of a dead tree mimics the decay of a human body after death. Specific trees or parts of trees are sometimes used within activities that mark key events within a person’s life, drawing on the connectedness of human/tree bodies and lifecycles. Trees, for example, are often part of practices surrounding the birth of a child with particular types of wood used to contain the placenta and afterbirth (e.g. Jordan 2003). The communities of Nusa Penida in Bali use coconuts as a receptacle for what are considered dangerous and polluting fluids associated with birth. The vessel is then buried and the site becomes a focal point for offerings during the child’s life (Giambelli 1998, 143). I would suggest that the natural function of the coconut as a container for fluids means it lends itself to this role during childbirth.

However, it is not only this physical property that guides its use but the way coconuts are understood more broadly. This includes a number of properties of coconuts that we, as archaeologists, would not perceive. The use of a coconut draws upon wider associations between coconut palms and the human body, growth and the human
lifecycle within Balinese society (Giambelli 1998). The white milk within a coconut is considered analogous to breast milk in Nusa Penida (Giambelli 1998) and I would argue that this gives the coconut the property of being able to safely hold bodily substances, specifically female bodily fluids associated with young children and sustenance. Seeds are often symbols of growth but amongst groups on Nusa Penida seeds specifically represent the origin and foundation that all living beings (including trees, people and buildings) require (Giambelli 1998, 149). The experience of coconuts as a biological seed, but also as producing a substance that is associated with mothers and life-giving sustenance, has led to this role for coconuts in the physical origin of human life. The burial of birthing fluids within a seed not only contains the polluting material in an appropriate vessel (a seed that has life-giving properties) but creates an important physical origin and place of foundation for that person to ensure their future growth.

It is not only at birth that the coconut is used to contain parts of human bodies and is buried to allow growth. During funerary rites, the head of the deceased is removed and a coconut replaces it (Giambelli 1998, 140). This is later retrieved and replanted as a symbol of rebirth and renewal, again drawing on the life-giving properties of the seed. After cremation a coconut is twice filled with ashes of the deceased and thrown into the sea to bring about purification of the body (Giambelli 1998, 147). This practice again uses a coconut for its ability to safely contain contaminated human substances, but also draws on the power of water to purify and cleanse, a topic I return to in chapter six. In this way the coconut palm plays a role in socially mediating processes of death and decay. The role of trees and coconuts in the
cosmology of communities in Nusa Penida is the result of a coming together of concepts and physical properties to create an understanding of the coconut that could not be gleaned through a study of its biology.

### 4.2.2 Trees as metaphors for understanding the world

Woodlands, a particular type of tree, or single trees feature within many belief systems. Reynolds (2010, 108) has suggested that trees could provide totemic species or be used at shamanic performances (see Bacigalupo 2007 for an example of this amongst the Mapuche tribe of Chile). They can be treated in specific ways and can receive offerings as part of a mythical understanding of the landscape (Basso 1996). Among animistic communities in the Arctic region, the presence of a particular tree often marks a sacred place and sacred trees are given names and feature in myths (Reynolds 2010, 108; see also Jordan 2003). A sacred tree is often understood to be at the centre of the cosmos and is thought to be represented in the human world by a living tree. Many societies communicate with spirits and deities through trees. Records of German and Scandinavian folklore describe beliefs in which trees were important places where men could communicate with the gods. Central pillars and sacred trees are described as a physical link between men and god(s) of the sky (Ellis Davidson 1975, 179).

In shamanic belief systems a three-tier understanding of the world (under world, middle world, upper world) is represented, both metaphorically and physically, by a tree. The roots represent the ambiguous underworld where malevolent entities and ghosts can be found; the trunk is the middle world of people and spirits; and the
branches represent the upperworld, filled with creator deities and the primary beings (Eliade 1964, 259). A central axis connecting these worlds is often represented as a tree and in shamanic beliefs this sacred tree is a point of access where the shaman can move between the three planes (Reynolds 2010, 81). The tri-partite understanding of the world and trees offers a way of thinking about wood from different parts of a tree. Wood from the trunk of the tree might draw on associations with the lived world whilst branches might be connected to deities, ancestors and spirits. The properties of wood from different parts of a tree encountered during its procurement and use will have been fundamental to how it was perceived and the role of both wood and trees in cosmologies.

Many hunter-gatherer communities also believe that different non-human entities inhabit particular features of the landscape including forests and trees (Rival 1998; Ingold 2000a, 66-7). When visiting sacred forests, the Karendi people of Indonesia follow strict behavioural codes that govern how they move, speak and what they speak of (C.T. Fowler 2003, 312). These prohibitions are part of a totemic belief system that respects the powerful ancestral spirits that inhabit the sacred forests, animals and wider landscape. Forest spirits in particular are thought to be able to cause physical or psychological harm and sacred forests are dangerous places to enter alone or at night (C.T. Fowler 2003).

Materials drawn from powerful trees may also be subject to codes that govern their use and the Karendi believe that as guardians of the forest ancestors take a particular interest in the use of its resources. As places where spirits and ancestors dwell, where
people could be in direct contact with gods or ancestors and where the other realms touch the human world, trees can be considered as potent and treacherous. The Koyukon of Alaska understand forest spirits as hostile and everyday practices and movements are carried out with a concern for obtaining favour with them (Nelson 2002). Woodlands can be considered as dangerous where the living and the dead, ancestors and spirits can be found in faunal and floral forms (Whitehead 2003, 63). For the Kuna of Panamá the forest is untamed and home to demons and ghosts who can be felt more closely amongst trees which are understood as ancient and primordial (Fortis 2008, 33-37), they are liminal and ambiguous places where boundaries between people, ancestors, spirits, animals and planes of existence are broken down (Bird-David 1992a; Whittle et al 1999, 384; Reynolds 2010, 108).

The following section explores practices that altered woodlands and trees and suggests that evidence for these interactions can be considered in relation to the range of beliefs that links trees, woodlands, people, lifecycles, the past, spirits, bodies and animate beings.

4.2.3 Altering the woodlands

Interactions between people and woodlands or trees will have been guided by the characteristics and properties of the material world that were experienced through everyday practice and that gave rise to their roles in broader cosmologies. Knowledge of different woodland conditions was a necessary and important part of Mesolithic and Neolithic life and will have drawn on the way trees and woodlands were understood (Mellars 1976; Moore 1996; 2003; Cummins 2000; McFadyen 2006,
The following section considers woodland clearance practices that used fire to think about Mesolithic interactions with trees and woodlands using the specific material approach used in this thesis.

Using palynological analyses and charcoal data a number of studies have suggested that fire disturbances in woodlands occurred in the Late Mesolithic of Britain (Zvelebil 1994; Simmons 1996). These are suggested to be temporary clearances on a small-scale that represent a deliberate technique employed to affect the flora of an area (Mellars 1976; Edwards 1990; Innes & Simmons, 2000; Simmons & Innes, 1996). However, deliberate action by people should not be considered as the sole reason for disturbances in the palaeoecological record, as discussed earlier in this chapter (section 4.1). In particular it should be noted that climate variability may have made woodlands more susceptible to forest fires (Whitehouse and Smith 2004). Ethnographic evidence from hunter-gatherer groups does however, provided examples of the use of fire to clear areas of land (Lewis, 1982; E. W. S. Russell, 1983; J. S. Clark & Royall, 1995; Delcourt et al, 1998; Moore 2000) and while it has been suggested that clearance using fire, or any form of slash-and-burn agriculture, would not have been necessary in the rich environment of the late Mesolithic (Rowley-Conwy 1982; Rackham 1986, 79) the practice nonetheless deserves consideration. In light of the mosaic character of the late Mesolithic landscape however, it is perhaps more useful to say that the type of woodland in the area should also be taken into consideration when interpreting evidence of clearances. Open and herb rich woodlands are unlikely to have needed clearances for subsistence reasons.
but the practice would be more useful in dense areas of woodland with a closed canopy.

Human manipulation of the forest by fire can be strongly suggested in some cases when a suite of methods are employed alongside archaeological evidence (Tipping 1994). Innes and Blackford (2003) used pollen, charcoal and fungal spore analysis to examine a fire disturbance at North Gill, Yorkshire dated to approximately 4366 BC and associated with a number of late Mesolithic assemblages in the area. Pollen analysis suggested that the oak-alder woodland had been disturbed by fire and that the initial regeneration of the area took the form of bracken and grassland herbs creating an open, meadow-like glade (Innes and Blackford 2003, 188-191). The vegetation within the pollen profile during this phase of regeneration would be attractive to a range of animals including aurochs, wild pigs and red deer. Fungal spore analysis provided direct evidence of high burning and the subsequent presence of grazing animals during the period before the forest canopy was restored (Innes and Blackford 2003, 192). The pollen evidence, charcoal concentration and fungal spore analysis support the basic premise that woodland clearance by fire was possible and would attract grazing animals. While the lithic scatters do not conclusively show that the fire disturbance was due to human activity it is certainly suggested.

Deliberate clearances using fire, when seen as the management of vegetation and woodlands, could be suggested to be a form of agricultural domestication. Considered from an economic perspective, and assuming the fire is the result of deliberate human action, the practice could be argued to be about the creation of hunting and gathering
opportunities. At an ecological level the process would remove dead vegetation and return nutrients to the soil more quickly in turn promoting the growth of a greater range of edible plant foods, such as berries and hazelnuts (Ahlgren and Ahlgren 1960; Whelan 1995; Moore 1996, 67; Innes and Simmons 2000, 162; Mason 2000). Sprouting plants, herbs and grasses would encourage animals to gather in the cleared area to graze which would provide increased opportunities for hunting (Dills 1970; Jarman 1972; Mellars, 1976). The production of areas of pasture has also been argued to have been part of practices concerned with the management of red deer herds (Warren 2005). The use of clearances in this way has been suggested to be part of broader patterns of land-use that managed the eco-system to maximize resources (Mellars 1975; 1976; Jacobi et al 1976; Jacobi 1978). This interpretation however is perhaps borne from a desire to identify links between Mesolithic wild plant husbandry and Neolithic agricultural activity, with the latter developing from the former (Brown 1997).

Disturbances in palaeo-ecological data that are interpreted as being the result of human action are frequently discussed as ‘management’ of woodlands, however the practice does not appear to be evident in all parts of Britain and should not be considered as part of subsistence practices for all Mesolithic groups (Warren 2005, 68). Rather than thinking of the practice as one in which people imposed form and composition on woodlands it is perhaps more useful to consider that this process may have taken place within a worldview in which the actions of people and woodlands were not antagonistic but part of a mutual involvement in a shared world. Alongside the changes outlined above controlled burning or the felling of trees would also result
in significant changes in the architecture and composition of an area. People would have moved through the area in a different way and the changed sounds, smells and textures would alter how the area was experienced and perceived. To only consider the ecological impact of this practice does not take into account the varied ways trees may have been experienced and understood by the groups inhabiting the woodland landscape.

Trees and woodlands may have been considered animate or alive, perhaps with spirits or ancestors. Warren (2005, 70) has suggested that the maintenance of a clearing may have been concerned with re-establishing relationships between the living and dead during the repetition of group occupation practices tied into seasonal movements around the landscape. By keeping an area open and stopping the growth of bracken and bushy vegetation, Warren (2005) also argues that Mesolithic groups actively participated in practices that maintained order and ensured the seasonal cycle continued. This interpretation moves away from the idea of intentional management and sees the disturbance in environmental data as an unintended outcome. Instead this alternative worldview may have resulted in practices that emphasise the need to maintain a clearing but for reasons other than control over vegetation.

In some ways this is a welcome approach to practices that created clearings, but creates a distinction between actions with subsistence and social drivers. I would argue that it is perhaps more fruitful to consider how the many different aspects of this practice might have been understood from both a social and economic perspective. Rather than fulfilling an economic or social need the destruction of an
The area of woodlands may have been understood through ideas about the lifecycles of trees and humans and ideas of renewal. The area of woodland may have been well known to the community and the detail of its composition may have embodied specific meanings, been bound up with particular identities, and facilitated or demanded certain activities. The particular space within the broader environment may have been distinctive in some way, perhaps through a feature of its architecture, composition, biography or through the activities that were carried out amongst the trees.

The process of burning the woodlands may have been only one part of a range of practices. Spirits may have been given gifts to appease them or tempt them to move elsewhere. Beyond the spectacular firing, later stages may have been understood as part of processes of rebirth in the form of young plants and the appearance of animals. Spirits or ancestors may have been regenerated by the practice and over time the growth of new trees may have continued these lifecycles. Although this is discussed more fully in chapter five it is worth noting that fire is often understood as animate or the embodiment of a spirit. Both fire and smoke are frequently used to cleanse or purify areas and may have been understood as key in clearing the area before new growth or rebirth could occur. The need to purify an area with a powerful fire may suggest it was thought necessary to clear woodlands or trees perhaps considered as dangerous or polluting. New growth might have been understood as springing from a successfully cleansed area. Smoke is also sometimes thought to rise to the ancestors or gods communicating messages from this world (see Chapter 5). The rising smoke from fire clearances would not only have been a visible sign to
other groups in the area but may have been thought to signal to other realms the actions that were taking place. These ideas do not need to be separate from an economic understanding of the practice but are presented as another way of thinking about how the process may have been understood by those inhabiting a woodland environment.

4.2.4 Clearings, Food and Mobility

Discussions of woodland clearance in the earliest Neolithic have centered around the adoption of an agricultural subsistence economy, as outlined in Chapter 2. The evidence for cereal crops in the earliest Neolithic does not extend across many of the sites from this period. This has led to suggestions that cereals may not have made a large contribution to diet and that cultivation of crops did not result in large-scale changes in the landscape at this time (e.g. Thomas 2003; 2004 but see G. Jones 2000; Rowley-Conwy 2000). Moffett et al (1989) have highlighted that early Neolithic carbonised plant assemblages are dominated by hazelnut shells, crab apple pips and other wild resources in stark contrast to assemblages from later prehistoric sites where cereals dominate. For communities in the first centuries of the Neolithic the use of a range of wild resources is suggested to have remained the basis of a broad and diverse diet in which cereals are suggested to have played a small part (Entwhistle and Grant 1989; Thomas 1999; Whittle 2003, 157).

M. Robinson (2000a) has shown that substantially more cereal grain has been recovered from timber structures such as Lismore Fields and Balbridie than other early Neolithic sites and it may be that cereals were reserved for specific occasions or
contexts (Thomas 2008). Cultivation of crops in the area surrounding the building at Balbridie would have required people to clear areas of land large enough to allow approximately 20,000 charred cereals to be recovered from the structure (Fairweather and Ralston 1993). At Warren Field, which is discussed further in Chapter 9 the oak woodland immediately surrounding the timber hall was removed to an extent beyond that which would be required for the construction. Large fields of several hundred metres were established and evidence of cereal cultivation and arable land suggest the land around the hall was heavily cultivated. The scale of these activities has been suggested to reflect the communal nature of the structures and the emphasis on groups working together to construct, and then use, these buildings (Tipping et al 1993). Through these tasks of clearance, construction and cultivation it could be argued that new Neolithic communities emerged.

The discovery of over 300,000 hazelnut shells in a 7th millennium BC context at Staosnaig on the Isle of Colonsay however, similarly does not represent a small-scale practice. The pit in which the shells were recovered was part of a series of six features, including a hearth and further pits, which were found as part of larger excavations of Mesolithic deposits on a raised beach on the east coast of Colonsay. The majority of the plant remains on the site came from a large circular pit that measured over 4.5m in diameter and contained a series of Mesolithic deposits (Mithen et al 2001). At the side of the feature a cache of unworked flint was recovered whilst within the pit the charred hazelnut shells dominated the fill alongside chipped and coarse stone artefacts, and dumps of stone and sand material
(Mithen et al 2001). The pit has been interpreted as the base of a house structure that had been reused as a receptacle for debitage and waste (Mithen 2000a).

To collect such a number of hazelnuts a large number of people would have needed to work together to harvest approximately 5000 trees in a short time (Warren 2005). The event seems to be associated with a decline in hazel on Colonsay suggesting that the area was not being managed in an agricultural sense (Warren 2005) and the intensive gathering of nuts does not therefore seem to represent the movement of hunter-gatherer subsistence in the direction of agriculture as evolutionary schemes might propose. However, the activities at Staosnaig could be argued to display many of the features of the communal tasks suggested to have mediated the emergence of Neolithic worldviews (see Thomas 2013 for a discussion). It may be that these Neolithic practices instead drew on ideas of communality and community that were familiar and already part of late Mesolithic worldviews.

While the activities at Staosnaig do not seem to indicate management of plant resources, those seeking to breakdown the dichotomy between Mesolithic and Neolithic lifeways have suggested that the practice of swidden cultivation, as suggested by clearances such as that discussed above, blurs the distinction between highly mobile Mesolithic hunter-gatherers and Neolithic farmers, with the limited use of cereals suggested to evidence the continuation of a mobile lifestyle in the early Neolithic (Warren 2005, 68). However, rather than shifting cultivation in temporary clearances, as argued for late Mesolithic subsistence practices, communities in the earliest Neolithic were growing cereals in fixed garden plots that were maintained
over decades (Fairbairn 2000; see also Bogaard 2002; Bogaard and Jones 2007). This
does not need to imply a lack of mobility in the lives of Neolithic groups but the
creation of long-lived places in the landscape that were returned to repeatedly through
the practice of cultivating crops. It is in these differences of endurance that cereal
cultivation becomes relevant to a discussion of human and woodland interactions.
Swidden or shifting cultivation involves temporary interventions in the woodland
landscape. Episodic clearing of areas of land involved a cycle of destruction and
renewal that, as discussed above, may have drawn on ideas of cleansing and rebirth.
The creation and maintenance of a plot, however small, may have involved an altered
relationship between people and woodlands where the process of rebirth took a
different form.

Bogaard and Jones (2007, 367) suggest that Neolithic groups created a new sense of
place through investment in long-lived fixed garden plots. The actions of people
creating and maintaining these plots will have created a space that connected to the
wider landscape, other tasks, places and people (after Conneller and Schadla-Hall
2003; McFadyen 2006; 2008). Whether this should be understood as investment is
questionable as that calls to mind value calculated in economic hours and labour. The
length of use of these plots may seem to mark a change between Mesolithic and
Neolithic practices, however the establishment and maintenance of long-lived places
within the landscape is a feature of Mesolithic lives as seen at Star Carr, Thatcham
and the shell middens of western Scotland. Although many Mesolithic clearances
appear to have been small and temporary some small areas of woodland, only tens of
metres in diameter, may have been repeatedly cleared and used for a century (Tipping
The incorporation of cereals into the diet of Neolithic groups resulted in a practice that may have altered the relationship between woodlands and people but also provided a new mechanism through which long-lived places were established in the landscape.

4.3 Woodworking and the Character of Wood

In Waiwai ways of speaking there is no comfortable substitution or approximate equivalent for the English word “tree”. While there is an extensive lexicon of proper names for specific varieties of trees based on their attributes and uses, there is no common noun for “tree” … accordingly there is no plural form of such individual units - there are no “trees” in Waiwai ways of speaking and living their environment. Instead one encounters wewe, which in my understanding refers to an entity that might be tentatively interpreted as ‘wood’.

(Mentore 2011, 33)

The symbolic importance of trees for many hunter-gatherer communities affects how wood is perceived and used. Interactions with trees involve a living material and wood may have been conceptualised in a similar way to its parent. This relationship, between tree and wood however, is not always present, as the Waiwai demonstrate, and to assume that trees and wood are either distinct or understood in a related manner may deny possible interpretive avenues. If the concept of trees is removed then wood could be described as existing at any number of different scales: as a woodland; as standing trees to be felled; as firewood; or a tiny splinter lodged inside a
person’s foot (Mentore 2011, 33). These are all wood but encountered, and perhaps understood, in different ways.

In British woodlands during the late Mesolithic the range of trees and tall shrubs included; ash, elm, lime, oak, pine, hazel, willow, birch, bird cherry, hawthorn, beech, maple, hornbeam, juniper, yew, alder, holly, and rowan all of which provided a range of timbers with different characteristics (Tipping 1994, 10-11; Whitehouse and Smith 2010). Consequently each of these types of tree, displaying different characteristics, may have been conceptualised in its own way. No two trees or two branches are the same and the biological life of a tree will further affect the presence of knots and the rigidity, strength, suppleness, and durability of a piece of wood (Coles et al 1978). To discuss wood as one material would blur these differences and simplify the experience and action of woodworking. The complexities with which a person had to contend while working wood allows the practice to be likened to skilled flint knapping or working with assorted clays. An understanding of the properties of different species would be required alongside knowledge of woodlands, the particularities of their environments, and an ability, borne from experience, to judge individual trees.

In some societies there is little or no distinction made between trees and wood and the way trees are conceptualized continues with the timber it produces. The Kwakiutl, a Native American group living on the coast of British Columbia, considered all objects made of cedar wood to be alive as they were the transformation of something powerful and living (Goldman 1975, 19). The biological death of a tree is seen as one
phase in an on-going life. The processes that transform it into structures, monuments, sculptures, objects and fuel are another stage in the life of a tree, rather than a death (see also D. Davies 1988, 41; Bloch and Parry 1992; Knight 1998, 198; Bloch 1998, 42). This belief is widespread (e.g. Rival 1998; Küchler 1993) but by no means universal and more subtle classifications exist. On the island of Nusa Penida in southeast Asia, discussed above (section 4.2.1) a distinction is made between a fruit-bearing tree (tree) and a tree that no longer produces fruit but is still alive (wood) (Giambelli 1998). This understanding is centred on the importance of seeds, specifically coconuts, in the conceptualization of life and persons in the Balinese Klungkung society. The ability of a tree to bear fruit is a more important distinction for these communities than its biological status as alive or dead.

While these examples demonstrate that wood can be considered as another stage in the life of a tree, some societies do perceive the felling of a tree as the end of its life and the removal of branches as harmful to the living tree. Amongst some Northwest Pacific coastal groups in North America, Mauzé (1998, 239) identified a tradition of human–tree relationships in which living trees were considered persons with a living energy. To cut down a tree was to kill it. Taboos surrounded interactions with trees and great care was taken to split planks or pieces of timber from standing trees without killing them. When making items of particular importance, such as canoes, a period of prayer and fasting would be undertaken to find the right tree (Mauzé 1998). Before any tree was cut prayers were said and gifts were offered to its spirits (Mauzé 1998, 241). If spirits were believed to dwell within a particular tree certain practices were required to tempt the spirit out of the tree before it was brought down. The
transformation of trees into wood involved the role of trees as a metaphor for strength and longevity, characteristics that carried on in the timber. Wooden objects were considered to be living despite the understanding amongst Northwest coast groups that once felled a tree would die. The distinction made here is not between living tree and dead wood but different sorts of living materials. Where a distinction is drawn, the experience of the different properties of a tree and wood and the process by which one becomes the other may lead to the two materials being conceptualised in different ways.

4.3.1 Wooden ‘things’

The range of ways that wood was used in the late Mesolithic and early Neolithic includes its use for building materials, in tool-making, for containers, as a fuel and perhaps for other uses such as the carving of wood into objects of veneration, wooden sculptures, idols, anthropomorphic dolls or totem-pole like structures (Gell 1998; Coles 1998, 163; Jordan 2001; Cummings and Whittle 2003, 261; Bacigalupo 2007; Reynolds 2010, 106). Evidence of woodworking in the late Mesolithic and earliest Neolithic is difficult to discuss in great detail due to the rarity of well-preserved timber from this period. However some sites and objects can offer some insight into the way wood was used. The Meare Heath Bow (Fig. 4.6) dates to the middle of the 4th millennium BC and was found in the peat of the Somerset levels. The smoothly finished fragment of bow is made of a single piece of yew, a resilient and supple wood, and has leather bands criss-crossed around the surviving limb (Coles et al. 1978, 8). The strength and flexibility of the wood will have been experienced through
the process of making and the form of the bow will have emerged from an engagement between craftsman and material.

Before the wood can be worked however, it must first be acquired. Analysis of the Meare Heath bow has suggested that it is made of a piece of heartwood (J. G. D. Clark 1963) from the trunk of a young yew tree (i.e. 80 to 100 years old; Prior 2000, 21). Modern bow making techniques would advocate the use two layers of wood in a bow; one of sapwood on the inside, as it is more elastic, and one of heartwood on the exterior where less flexibility is needed (McEwen et al 1991). A carefully selected branch or very young yew tree could be split down the middle to provide these two layers. There is a lack of sapwood on the Meare Heath bow however and this has been interpreted in two ways; as a deliberate technological choice made by skilled craftsmen (Prior 2000) or as an example of differential survival between the two types of wood (Bergman et al 1988; McEwen et al 1991).

Prior (2000) has shown that the piece of bow recovered from Meare Heath has tool marks on both heartwood surfaces which suggests that no sapwood was ever present and suggests that the bow was formed from a single piece of young heartwood. This choice of timber for Neolithic bows has been seen elsewhere in Europe (for examples see J. G. D. Clark 1963; Rausing 1967; Lanting et al 1999) and so while it does not follow modern practice the choice of material does not seem to be unusual.
The strength and flexibility of yew does recommend it as a suitable wood for bows but other characteristics might also have influenced its use. Yew trees are can be very long-lived with some examples today thought to be approximately 2000 years old (Mitchell 1978, 51). These older trees have a diameter of nine to ten metres but their trunk is hollow. As discussed above long-lived trees often provide a sense of continuity and a tangible connection to past generations or other worlds. A hollow centre may have been a particularly significant space within a powerful tree and may have been understood as the decaying or dead core of a long-lived and dangerous tree. The wood chosen for the Meare Heath bow was only 80-100 years old but may been perceived in a similar way to older trees. The choice of a younger tree may have enabled the use of the living core material to make a bow that held properties of life and death.

Alongside these characteristics all parts of a yew tree (apart from the berry) are highly toxic and in many parts of Britain today they are rare after being actively eradicated.
due to the threat they pose to livestock (Johnson 2004, 22). The toxic nature of the tree may have made yew wood a potent material. Understood within a specific worldview the poisonous nature of the tree may have been deliberately drawn upon in creating the bow. The addition of leather and sinew bands to the limbs of the bow is not a feature that correlates to any modern bow making practice although they have been shown to act as shock-absorbers when the bow is used (Prior 2000). This may have been understood as the effect of the soft, flexible material binding the dangerous wood. Leather and sinew may have been placed around the limbs to contain or harness the many different properties of the Yew.

It can be argued that the use of young heartwood particularly suits a bow made from one piece of wood (Prior 2000) however, it may be that the form of bow was chosen to allow the use of that timber. Different parts of a tree may have been understood in different ways and the young heartwood may have been perceived as the most appropriate for this use. Reconstructions of the bow have found that it is particularly accurate, quiet and can shoot an arrow a distance of 50m in just over one second, a faster velocity than many bows from later historical periods, including medieval longbows (Prior 2000). If the timber chosen was of prime importance and dictated this form of bow it may be that the properties displayed by the bow were understood as the result of a mutual engagement between craftsman and that specific material that involved more than mechanical properties.

Three further Neolithic bows were recovered from excavations of the Sweet Track in the same wetland landscape as the Meare Heath bow. These bows were made of hazel
and were more roughly constructed. Hazel trees have a maximum lifespan of about 80 years, although wood used to make the bows is unlikely to have been this age. The nuts from Hazel trees were a major source of food in both the late Mesolithic and earliest Neolithic and charred hazelnut shells are one of the most ubiquitous finds on occupation sites. Rather than being perceived as an ancient and dangerous tree, hazel may have been intimately connected with vitality and health. Evidence of coppicing suggests that hazel was used for a variety of purposes and this perhaps brought the tree and wood into closer association with people and everyday practices.

The Meare Heath bow and the hazel bows were recovered from a waterlogged context during peat-cutting and all four were broken when deposited into the water. A break across the handle of the Meare Heath bow was identified and initially suggested to have occurred during use. The direction of the break (bending outwards from belly to back) however indicates that this was a deliberate break that could not have occurred during normal use (Prior 2000). The broken bow was then deposited into a wet, bog environment that had received other deposits such as a Graig Llywd stone axe (Somerset Levels Papers 15, 1989, 67).

Deposits of broken objects into watery places are well known in the Neolithic and the act is likely to have drawn on broader understandings of water (see Chapter six). Further examples of broken bows in particular are also known: the ‘Rotten Bottom’ bow found in Dumfriesshire is also made from a single piece of yew and has been dated to 4040–3640 BC. The bow was broken before being deposited in a pool of water (Sheridan 1992). The Ashcott Heath bow, found within the same area as the
Meare Heath bow, was small but made from a single piece of yew and broken across the handle (Coles and Coles 1989). The Yew material from which these bows were made may have been considered as particularly dangerous and the bow itself may have been regarded as powerful.

The fine finish of the Meare Heath bow in particular may suggest that it was especially potent or reserved for specific tasks and its deposition into water may have been concerned with safely containing a dangerous object. The ability of water to safely contain or break down dangerous material is discussed further in chapter six but is noted here as frequently seen in belief systems. Breakage itself may have been understood as part of transformations that an object undergoes through its life. By advancing this process the people depositing the bow may have been trying to remove unfavourable objects and materials from the lived world (Pollard 2004, 48).

However, the hazel bows found near the Sweet Track were also broken and deposited in a watery context. If hazel was not a dangerous material it may be that while not potent these objects became powerful through use. The deposition of bows more generally may involve an understanding of the lifecycles of people, materials and objects; perhaps concerned with the use of the bows for a specific task or in a particular role or connections to the lifecycles of those who made or used the bows. Amongst some hunter-gatherer societies special emphasis is placed on the destruction of a bow following the death of its owner (e.g. Bridges 1935). The end of specific activities tasks or the death of these particular people may have required the removal of each bow from the realm of the living.
It is interesting that amongst these four bows one was just one metre in length and has been suggested to be for a child (Coles and Coles 1986, 61) however, it may be that the bow was not intended for use but served as a representation of hunting practices and the engagement between people and materials. The breakage and deposition of these bows may have drawn on similar ideas to those that guided the making and treatment of the bows made from yew. The use of these hazel bows, the actions and practices they were involved in, and both their own lifecycle and that of specific people, may have meant these were powerful objects. By breaking and depositing these bows, material processes of decay that were known and experienced in the lived word may have been recalled. This transformation may have been part of a practice that continued lifecycles and emphasised the impermanence of the material and human life (Pollard 2004).

The properties of yew trees experienced through engagements with living trees and their wood will have brought about cosmological understandings of the nature of yew, its position in the make-up of the universe, and informed how it was perceived within social and individual worldviews. These beliefs will have been drawn upon and the properties of the tree and wood will have been experienced again during the process of making the Meare Heath bow. The finished object will have embodied these ideas within the material of its construction to be experienced anew during its use. In this way a bow made of yew may have been understood as a potent object, powerful and strong but dangerous. Engaging with trees and woodlands and the experience of their properties gives rise to how they are understood and their place in
broader cosmologies. The marriage of concept and material is mediated through the experience of properties and is central to how materials, places and objects are perceived within socially specific worldviews.

4.3.2 Wooden Posts, Wooden Structures.

The construction of wooden structures has increasingly become recognised as a feature of the earliest Neolithic and has been suggested to be a precursor to later types of monuments such as long barrows and chambered tombs. These sites existed in a partly mobile landscape where living in permanent settlements was rare and there is evidence for some cultivation of cereal crops but not for large-scale farming (Whittle 2003; Bogaard and Jones 2007). It has been suggested that the onset of the Neolithic represented a shift in how woodlands and trees were perceived with both ‘becoming a resource and a medium for human activity’ (Noble 2006, 94; see also Tipping 1994; Edwards and Whittington 1997; Austin 2000, 73). However, Neolithic timber structures have often been identified beneath later monuments and so their discovery has been more likely. Similarly, the large timber halls of the earliest Neolithic are more visible due to their size. I would argue that woodland and trees were already used extensively by Mesolithic communities but perhaps in less tangible ways

The use of trees and woodlands, either as resource or medium, does not always focus on the use of timber but can be centred on the use of living trees. Many hunter-gatherer groups such as the Bushmen of Kalahari San use trees as living architecture for camp sites, as support for small groups of tents, as shelter or shade, and as a place to hang food away from scavengers (Warren 2005, 67). The modification of trees
through carving, scarring and charring involves engagements with trees that can survive on the living tree for centuries and can be repeatedly referred to by generations. These practices often draw on trees as a medium for activity (see, for example, the Aborigine carved trees discussed at the start of this section).

In Scandinavia, tree modification practices were widespread until the late nineteenth century and occurred for a range of reasons; from scarring trees to mark boundaries and paths, to peeling the outer bark to access the edible inner bark, to deliberately marking trees during ceremonies (Östlund et al 2002). The nomadic Saami moved around the forest environment with their reindeer. The areas where people and animals were brought together to milk were considered special places within the forest (Östlund et al 2002). Handles were carved in the trunks of trees in these areas to tether the animals and shelves to hold vessels of milk were made out wedges driven into living trees (Fig. 4.7)
For late Mesolithic communities in Britain trees were a source of food, as evidenced by many finds of charred hazelnut shells, and a structural resource that people engaged with as they moved around the woodland landscape. Below peat layers the submerged site at Bouldnor Cliff in the western Solent featured a preserved Mesolithic forest layer dated to 6240 – 6000 cal. BC (Momber et al 2011). The Mesolithic site is suggested to be at the edge of a river or body of water in a wooded environment that was at first dominated by pine but increasingly made up of oak and hazel (Momber et al 2011). The site has yielded flint tools, re-used burnt flints, wooden artefacts, charcoal, hazelnuts and charred hazelnut shells alongside well preserved worked timbers and worked wood chips (Momber et al 2011). The range of
finds is not spectacular but the timbers, along with burnt flint flakes, signs of burning and wood chips can tell us something of wood-working in the Mesolithic.

Timbers recovered included posts, planks and stakes that suggested coppicing had been practised. The largest timber found within the excavations is thought to have been split tangentially from a large oak trunk using burnt flints to prepare the section and wedges to remove it (Momber et al 2011). This same technique has recently been identified as being used at Star Carr (Conneller per comm). The plank at Bouldnor Cliff was suggested by the excavators to have originally been 1.5m – 2m wide and up to 10m long. This was considered to be ‘too massive for domestic application’ (Momber et al 2011, 89) and it is suggested that the remainder of the trunk was the real focus. A controlled burning may have carbonised the centre of the trunk to allow it to be removed leaving a husk from which a canoe could be formed (Momber et al 2011).

Elsewhere on the site however, the amount and variety of timber found have led to suggestions by the excavators of a large structure or timber platform (Momber et al 1981, 81; Warren 2012). The emphasis on the production of a boat or canoe perhaps reflects the research focus of the authors and I would argue that the large plank deserves more consideration. The postholes at Stonehenge and structures around Star Carr show that Mesolithic communities were capable of using large pieces of wood to create architecture. The interpretation that other timbers found on the site represent a large structure suggests that this piece of wood, which may have been less than ten metres in length, could have been used in the same or similar projects.
The timbers recovered from Bouldnor Cliff suggest that Mesolithic groups were actively engaging with trees and timber and using complex woodworking techniques to construct architecture among the woodlands. The earliest Neolithic features the use of timber in large quantities and it is likely that trees played a fundamental role in the way communities understood the world. How different this may be from a late Mesolithic worldview is less clear. Evidence for early Neolithic timber structures has been found beneath many long cairns and barrows and often forms part of the primary activities at these sites. Postholes beneath Slewcairn, Dumfries and Galloway; Pitnacree, Perthshire; Haddenham, Cambridgshire, Nutbane, Hants, and Wayland’s Smithy, Oxfordshire, for instance have all been interpreted as mortuary structures (Masters 1973; Coles and Simpson 1965; Evans and Hodder 2006; Morgan 1959; Atkinson 1965). The treatment of the structures differs; some were left to decay in situ but were removed before further activity, while other structures were burnt down. Practices involving the burning of timber structures in the earliest Neolithic will be explored in chapter five (5.3.3) and so will not be discussed further here.

J. G. Scott (1992) has argued that at the sites of Aldwincle I, Northamptonshire, and Fussell’s Lodge, Wiltshire, posts had supported a raised platform for the exposure of human remains. However, the large size of the post holes, and presumably the posts they held, were beyond what would be necessary to support such a structure and might suggest that the posts were more than a structural component (Evans et al 1999, 251). Alongside this, re-evaluations by Noble (2006) and Wysocki et al (2007) have shown that many of the posts had decayed in situ or had been removed before
any skeletal material was deposited. This not only negates the suggestion of a mortuary function for these timber structures but means that the posts themselves formed the first phase of activity at these sites before any mortuary activity (Noble 2006).

An interpretation of these structures centred on the occurrence of pairs of ‘D’-shaped postholes has been offered by Noble (2006) in which he argues that they are common to many of the sites where timber features occur. Noble (2006, 96) argues that trees would have been of prime importance to early Neolithic communities as symbolic media that allowed people to conceptualise the world. The erection of a pair of posts is suggested to begin with the establishment of a clearing within the woodlands and evidence of this has been found beneath a number of barrows. During this process of clearance the felling of trees is argued to have been understood as a ‘sacrifice’ (Noble 2006, 99) that allowed new Neolithic practices to take place. In light of this sacrifice a tree that had been felled would be split and raised as two posts which were left to decay in situ (Noble 2006). The raising of posts, Noble (2006) suggests, was an act that was perhaps understood as the re-birth of the tree.

Noble (2006) presents trees as symbols for fertility, regeneration, lifecycles and the human body. The (unknown) time over which the posts would decay is suggested by Noble (2006) to have been perceived as more similar to a human lifespan than the natural life of the tree. The posts are suggested to have symbolised a human body and to have enabled people to conceptualise life and death through the processes of rebirth and decay. Noble (2006, 99) argues that the posts would have become a focus of
activities that sought to connect to the past as the process of decay was similar to the transformation of person to ancestor. On the basis that the position of the posts is respected in some cases, Noble (2006) makes the argument that human remains deposited at the sites in later phases were offerings to the original trees.

It is true that pairs of postholes do occur under a number of later monuments such as those mentioned above, however at a number of sites, more than two posts were erected, occasionally four posts can be interpreted as two pairs of postholes, as at Aldwincle I, but many have three or more postholes that accompanied the split trunks. At Lochill for example, three large postholes formed a line and were found to have been the first phase of activity on the site. The postholes at either end held posts of 0.90m in diameter and were interpreted by the excavator as a split tree trunk (Masters 1973, 97). In the centre of these two large postholes a third of similar size held two smaller posts of 0.30 m and 0.25 m. diameter. When the three posts were burnt down it was those in the centre that were the most intensely burnt (Masters 1973).

A similar layout is seen at Slewcairn, just six kilometres from Lochill, except that the posts were allowed to decay rather than being burnt, and at Dalladies three large postholes were accompanied by two smaller postholes. At Fussell’s Lodge three large pits have been suggested as the first activity on the site (Thomas 1999, 131) and have been interpreted as postholes for a range of different mortuary structures (Atkinson 1965; Piggott 1966; Kinnes 1992; Wysocki et al 2007). The two end postholes were large (c. 1.0m in diameter) and of comparable size whilst the middle posthole was
slightly smaller (c. 0.8m in diameter) (Ashbee 1966). While some sites do seem to feature a pair of postholes as the first phase of activity a number of sites also feature three postholes or more, although there are occasionally pairs of postholes identifiable within these. In this regard Noble’s interpretation is too generalised and the occurrence of paired ‘D’-shaped postholes should be perhaps be considered as part of wider activities.

Noble’s argument that trees more broadly symbolised life, permanence and vitality is a valid suggestion in light of the ethnographic literature, and the clearance of trees for cultivation may have been understood within this worldview. Unlike the clearings created by Mesolithic groups, in which plants and trees were reborn, the open space created by Neolithic groups involved the establishment of different types of plants. For that reason it may be that the posts were erected as a way of ‘re-planting’ the felled trees and mediating the change in the use of the landscape. As Noble (2006, 100) also highlights the large size of the postholes hints at old, mature trees which may have been understood as ancestors and a connection to the past. I would add to this that long-lived trees can also be important as metaphors for endurance and connections to both the past and future. However, rather than understanding trees as symbols for a range of concepts, I would argue that attitudes towards trees and woodlands should be thought of as borne from experience of places and materials.

Alternative suggestions can be made about the significance of trees; spirits may have been thought to dwell in particular trees and specific trees, especially older trees, may have been places where people could communicate with deities or ancestors. The
likely great age of the split trunks do suggest a concern with permanence, generations and the past, but perhaps also endurance (see Evans et al 1999). By felling the tree, and others, future connections and on-going life are severed and it is perhaps also this loss that must be mediated. If a specific tree was a place to communicate with ancestors or deities then the resurrection of a post might be a way of maintaining or renewing this aspect of the landscape.

There is little evidence to suggest which species of tree were used for the posts raised in the earliest Neolithic, although, as Noble (2006, 100) comments, the sheer size of some of the postholes suggests that oak posts were used. Oak trees are long-lived and can be both broad and tall, properties that may have been drawn upon as a metaphor for permanence and thought of as a tangible connection to the past and future. The heartwood is strong, durable and resistant to insect and fungal attack giving it characteristics connected with life, strength and durability (White 1995). Like many trees its bark is broken by fissures that grow deeper with age and its trunk may be susceptible to other quirks, such as hollows, bark loss and areas of dead wood (Eppinger 2006, 184). The textures of the tree would alter with age as its form develops and grows, and connections to lifecycles may have been drawn from an understanding of shared transformations with the textures of human and animal bodies.

To fell and then split an old and large tree would not be a simple procedure but would certainly not be beyond Neolithic, or indeed Mesolithic, communities (Fig. 4.8). While Noble advocates the importance of trees and the presence of split trunks at
many sites, little is said as to why the trunks of these trees were split. Much emphasis is placed on the visual nature of the decay of the posts (Noble 2006, 99-101) but no consideration is given to how a split trunk might appear, the different properties that might come to the fore, and how this might affect the experience of those involved. The different properties of heartwood and sapwood, for example, may have led to their being understood in different ways; the heartwood is stronger and longer-lasting than the outer sapwood. In splitting the tree, the heartwood was exposed and it might be considered to be that this part of the tree was specifically being drawn upon. If the tree was thought to house a spirit it may also be that by splitting the trunk the spirit was released and able to move elsewhere. These two suggestions are not mutually exclusive and it is likely that beliefs and understandings of oak trees were multi-faceted.
The practice of felling trees and creating a clearing would in itself act to forge identities and create a space within the landscape. By splitting and then erecting a mature, strong, tree in a process that might have been understood to involve spirits or communications with other realms, the identities of the group involved would be (re)created within a cosmology mediated by trees and wood. Other posts erected at the same site may have been of other types of wood understood differently through their varied properties. Consequently they may have been treated differently; they were perhaps carved, given gifts or had their bark removed. They do not however
seem to have been split and this suggests that this practice was required only for oak trees rather than trees in general.

4.4 Conclusions

A recent report on the discovery of Neolithic structures at Horton in Berkshire included the following statement: ‘The houses were probably built by pioneer farmers that had moved into the area bringing with them the knowledge and woodworking skills necessary to construct substantial buildings’ (Wessex Archaeology 2013). Whether timber structures should be considered houses is a debate I will not enter into here, but will address in the next chapter. However, the suggestion that indigenous hunter-gatherer groups in southern Britain did not have the woodworking skills to construct large timber structures is inaccurate. The platform at Star Carr (Mellars and Dark 1998; M. Taylor 1998; Conneller pers comm), posts at Stonehenge (see above) and finds at Bouldnor Cliff (Momber et al 2011) suggest that people in the Mesolithic were skilled craftspeople who were able to procure and work large timbers and to construct a range of structures. The statement by those interpreting Horton perhaps reflects the persistence of ideas that present Mesolithic communities as inferior to their Neolithic counterparts.

The pervasiveness of trees in the lives of both Mesolithic and Neolithic communities around 4000 BC may in itself suggest that woodlands and trees were fundamental to understanding the world. From the ethnographic material surveyed, it is clear that trees can be powerful metaphors that make tangible concepts such as life, renewal, development, decay, time and seasons. For those inhabiting a wooded environment,
some of the most important persons may have been trees; viewed as animate, possessing agency and sociality (Ingold 2000; Lye 1997: 156–163). Both hunter-gatherer and traditional farming societies have been recorded as understanding people, plants and animals as sharing the same world (Bird-David 1992b; 1999; Ingold 2000). While not specifically advocating this worldview as applicable to Mesolithic or Neolithic Britain, it serves to highlight that the differences between trees and people are not always perceived to be as fundamental as we might imagine.

The many activities visible in the archaeological record that would have involved interactions between people and trees has allowed this chapter to consider the range of properties that those trees may have displayed and which may have come to the fore within those engagements. Possibilities for how trees and wood may have been understood demonstrate that rather than a mute material their properties influenced their use and understanding as well as that of the objects, places and structures of which they became part. Through trees, and the use of wood, cosmologies and worldviews are physically drawn upon and both renewed and transformed. The many types of trees and timber, and their correspondent properties allow different facets of life and the world to be mediated through everyday practice. The characteristics of yew as a poisonous and old tree, hollow at the core, slow to grow and slow to die, would have been known through interactions with the tree by both people and animals. The choice of yew for a bow perhaps came through an understanding that its properties encourage its use for bows in terms of constructional benefit but also as a potent material that helped mediate hunting practices and present them as part of the order of the world.
Evans et al (1999) suggest that it is the capacity for transformation that gives trees their significance. I would argue that it is the range of properties displayed by different trees and therefore the range of possibilities for use, metaphor, and myth that gives them a central position not only in the landscape but in the cosmologies of these communities. Dwelling in a woodland or forest involves interaction with many different types of tree even where one species dominates. A cosmology that holds trees at its centre would draw on all of these species in a complex manner. It is argued that it was in everyday movements and actions, and the relational process of engaging with wood, trees and woodlands that cosmological understandings were both renewed and remade. The complex and multi-faceted way in which woodlands, trees and wood were used is suggested to reflect a similarly varied role for these elements in cosmological schemes. The following chapter uses the same approach as applied here to consider the use of fire in the late Mesolithic and earliest Neolithic.
Chapter 5: Fire: Affecting people, places and the material world

5.1 Fire: phenomenon and artefact

The complex relationship between people, trees and wood is also seen in relationships with, and understandings of, fire. This extends to academic study of fire in archaeology: fire can be perceived by archaeologists as both phenomenon and artefact, subject to experimental recreation, scientific analysis and philosophical discussion (Gheorghiu 2002). Fire is relational and understood in specific contexts and worldviews. To explore these understandings, Sørensen and Bille (2008) suggest that archaeologists should think about what fire does, rather than what it is: they argue that a study of the transformations fire brings about, rather than discussions of its nature, can tell us more of how fire was understood. Within their approach, fire can be studied from the perspective of space, the human body, material culture, the creation of place and the environment. I would argue however, that, alongside their approach, there is a place for a consideration of fire itself in terms of different types of fire, how they manifest, how they behave, what properties they display and the interactions with other materials.

This chapter presents ethnographic examples exploring beliefs about fire, its role in everyday activities and its position in cosmological schemes, before drawing on these to consider the different ways that fire was used and understood as a material force in
Mesolithic and Neolithic contexts. The remains of fires, transformed materials, the structures associated with them and traces of activities centered on these features can be used to consider in detail the material experiences of interactions between people and smoke, flames and embers. Fire was prevalent in the lives of communities at this time and, by thinking about a range of practices in which people and fire interacted, the possibility of a multi-faceted understanding is explored.

5.1.1 Thinking, Doing and Being through Smoke and Fire

In ancient times there lived very small people … [t]hey were naked, ate raw meat, and did not know how to make fire. It started to get cold … [t]hen Jesus came flying from the sky with a torch in his hand. He gave it to the small people, who thus came to have fire. The smoke from their fires made them grow bigger and bigger and they became humans.

(A creation myth of the Upper Kolymar Yukaghir in Willerslev 2007, 83)

It should be noted that the story demonstrates the Christian influence on these communities in recent decades. Similar myths told by neighbouring groups suggest that a Raven originally brought fire to the people. The myth tells of the creation of humans through smoke. This belief, in the transformative power of smoke, can be identified within everyday practices of the Yukaghir hunters, where cosmological schemes are expressed as practical knowledge that guides the use and understanding of fire and smoke. Wood smoke, for example is so strongly associated with humans,
and a signifier of human presence, that the border between camp and forest is marked by the point where smoke can no longer be detected.

Both wood and smoke play a role within hunting practices. For the Yukaghir, in order for a person to become a good hunter there must be a ‘dehumanization’ process in which human qualities are exchanged for those of the prey. The hunter is encouraged to identify with their prey, mimicking its movements to understand its actions. Through this process a person is transformed into a hunter-animal kind of being, with one kind of body transformed into another. A key part of this process of transformation involves removing the odour of humans, specifically that of smoke. To do this hunters enter a sauna where they wipe themselves with birch leaves to disguise their smell (Willerslev and Pedersen 2010).

On their return from the forest, wood smoke is used to humanize the hunters as they pass over the border of the camp (Willerslev 2007, 83-85), transforming them once again. These transformative practices are both guided by, and reaffirm, the place of smoke in Yukaghir cosmologies. More specifically the transformative property of smoke, as embedded in the creation myth, and as part of a practical knowledge, is experienced anew through the interaction between human and material and reasserted. Among the Yukaghir smoke marks borders: between camp and forest and between human and hunter. Smoke is key to navigating those places where categories are changeable and blurred and where a person can be transformed into other beings.
The belief that smoke has the ability to bring about transformations is not unique to these groups. In shamanic performances smoke and light are often used to affect the experience of participants and create atmospheres conducive to practices that alter the state of consciousness (Vitebsky 1995; Watson 2006, 184; Bacigalupo 2007, Reynolds 2010). As part of a healing practice, Riff shamans in Morocco burn tar and white benzoin to create a distinctive smoke. This is directed under the clothes of the patient, who must breathe it in as it rises to cleanse and heal the body (Hoerr Charles 1953, 105). Shamans of the Chilean Mapuche understand smoke to be particularly powerful for cleansing and perform smoke exorcisms (sahumerio) to expel evil spirits. The smoke acts by identifying these spirits, and in doing so reveals them, transforming them from unseen to tangible, a change that drives them away (Bacigalupo 2007, 20-22; Fig. 5.1).

*Figure 5.1* A smoke exorcism is performed to expel evil spirits (Bacigalupo 2007, 22 Fig. 2.2)
The use of smoke is often complex. A diverse range of practices can draw upon broader characteristics of smoke to achieve different ends, and the smoke of various fuels can be understood in different ways. In Zulu societies a medicinal herb (*imphepho*) is burnt in a number of different practices that seek to invoke the goodwill of the ancestors, safeguard the home against evil spirits at night, purify the body before sleep, purify the dead, and cleanse areas for the ancestors (Hutchings 2007). The herb is also burnt by diviners who use the smoke as a way of communicating with the ancestors. These practices all draw on a belief that all smoke rises to the ancestors, facilitating communication. This is combined with an understanding of the particular herb as connected to the ancestors, and that its smoke has the characteristics of purifying and cleansing (Hutchings 2007, 203-204). These properties are part of a practical knowledge based in cosmological schemes and are drawn upon in these different practices and performances where they are experienced again.

The role of smoke, the properties it holds, and the practices it is engaged in are varied and complex in these examples. Practices that call on the ability of smoke to connect and communicate to other realms, act to renew cosmological understandings about the universe and the existence of other worlds. The power of smoke to purify is often drawn on to cleanse people and places, both physical and cosmological, and this ability suggests an understanding that smoke is both powerful and transformative. For the Yukagihr, practices using smoke draw on and recreate cosmologies that hold smoke and its power to transform at the centre of origin myths.
An understanding of transformation through smoke demonstrates ideas discussed in chapter 3 where the experience of the properties of smoke is combined with a cultural understanding of its transformative power. Smoke affects people physically, causing their eyes to water and breathing to alter, at times leading to an uncomfortable experience. The lingering smell of smoke permeating clothing and hair is a palpable trace of a process, practice, actions, movements and of an event. These physical experiences of the properties of smoke, and tangible changes in people, materials and places are combined with a cultural quality of transformative power to form an understanding of a powerfully transformative element. This understanding is both drawn upon and renewed in each interaction.

More specific properties of smoke can lead to a more complex understanding of its qualities and cosmological role. Smoke is not uniform and burning different types of fuel can alter the smell and texture of the smoke. A specific smoke can be brought forth and understood in a certain way. Beyond the primary fuel the addition of other materials can produce distinctive atmospheres; pine resin, for example, when added to a fire lengthens the burning time of the main fuel and releases a distinctive smell (Sherratt 1991). Fragrant flowers, leaves, bark, and roots could also have been added to fires and would have resulted in different aromas (Marangou and Stern 2009, 407). These different ‘ingredients’ would, through the fire and smoke, would call to mind specific trees, parts of trees, plants, and known places. The fire and smoke may have been understood to be displaying characteristics of these beings and features in a way that contributed to their understanding and use.
Alongside, but often distinct from its smoke, fire is considered a powerful material force in the worldview of many societies (e.g. Jordan 2003). Fire can be destructive and terrifying but can be fragile and quickly extinguished. Like trees, wood and smoke, fire is a changeable material. Edsman (1987) describes fire as a multifaceted phenomenon that can be discussed in terms of transformations, communication, metamorphosis, and as a powerful symbol of life and the home, providing heat, light, warmth, and facilitating cooking. The experience of fires can vary; they can be gentle and comforting, controllable, but also dangerous and unruly in other situations (Dosedla & Krauliz 2009). A spectrum of shades from yellow to red are the dominant colours of an active fire, but blues, whites and black can be glimpsed amongst the flames, and enhanced by the addition of different fuels (Borić 2002). The sounds and visual experience of a fire vary with its size and intensity and can be particularly potent for those involved in, or in close proximity to, the event. Although the high temperature of a fire is perhaps the property that is most active in physical transformations, such as cooking or cremation, the colours, sounds, smells and sight of fire are properties that were experienced daily by communities in Britain around 4000 BC.

Fire is often considered alive and an active substance in the world, often thought to be embodying a spirit rather than merely symbolising its existence (e.g. Chad 1963, 114; Utagawa and 宇田川洋 1992; Newland 2004; C. S. Fowler 2006; Dussart 2006, 635). The physical nature of fire is one of movement, flames do not sit still but flicker, wave and blaze: properties that may be thought to indicate life. Fires are
shaped by the air around them, and the material, social and spatial contexts in which they are lit (Sørensen and Bille 2008, 254). Over the course of a burning, fire changes colour, temperature, intensity, smell, sound and extent. Different properties emerge in different contexts, often leading to complex conceptualisations of fire that perhaps includes an understanding of a material that is interacting with people, places and things. Fire itself also undergoes a transformation within its own existence (Sørensen and Bille 2008, 256), from first spark, to full flame, to glowing embers and finally cold ashes: fires therefore have a temporal narrative and may be perceived as having a lifecycle.

It is this lifecycle and sense of movement that perhaps leads to ideas of fire as alive, or animate, sometimes embodying a named and known spirit or ancestor. A sense of fire being particularly powerful has run through many of the examples presented above and is perhaps linked to these understandings of fire as a living material force. The power to transform is often attributed to fire and may include both the physical transformations we see and measure, and transformations in the way materials were understood. When used to cremate a corpse, for example, fire and smoke are understood to transform and destroy the dangerous materials, while purifying the soul. Among groups in western Siberia smoke is often used to purify the dead while fire ‘cooks’ the body to cleanse the deceased before the journey to the ancestors (Kroll-Lerner 2007, 193).

Fire and smoke are changeable, variable and highly sensory and their range of properties guide how they are understood within cosmological schemes, as well as
providing practical knowledge drawn upon in everyday activities. The different ways in which certain properties of fire may have been understood or experienced have fed into some archaeological interpretations. Larsson (2000; 2002), whilst discussing Neolithic Scandinavia, considered the use of fire as a transformative tool in a range of spectacular performances that altered both flint axes and timber houses. Larsson (2002) argued that care was taken to enhance the visual aspect of the fire through built structures that raised and intensified the burning. In this context it is the visual impact of fire that is suggested to have been particularly powerful in these practices. This visual spectacle would be accessible by many, drawing together groups of people in an experience that may have emphasised shared beliefs and identities. In a separate practice Larsson (2000) also discussed the power of fire to change the colour of flint axes as part of another kind of key transformative event. This change, however, would not be as inclusive as the firing of a timber house or structure, which demonstrates the intimate level at which fire can operate, perhaps emphasising boundaries or the existence of specific groups within a wider community.

Practices, such as those suggested by Larsson, highlight the ability of fire to enhance the creation of memories of places, people and events and can act as a socialising instrument that facilitates or demands collective practices (Tringham 2005; Gheorghiu and Nash 2007; Dosedla and Krauliz 2009). As a part of performances and group activities, fires may have been a focus and choreographing feature playing a central role in dances or ceremonies (Manzi and Spikins 2008; Reynolds 2010). During Balinese Hindu cremation ceremonies, both the position of those attending and the movement of the deceased are guided by cosmological schemes that are
equally consciously drawn upon in everyday life. Women stand to the north of the cremation pyre, a direction that connects them to the gods, the mountains and purity while the body makes a journey, as corpse and then as cremated bone, to the south and water, where demons reside (Downes 1999, 20-22). In this way fire can act to orientate human action in a way that may materialise cosmological schemes or categories.

I have suggested in chapter four that the use of fire in Mesolithic woodland clearances may have been seen as purifying or cleansing an area to allow new growth, which was perhaps understood as rebirth: evidenced by the return of flora to the area and the appearance of animals. The role and understanding of woodlands, trees and fire in specific cosmologies was renewed by these actions and may also have acted to remake the group by underlining their shared worldviews. The following section explores the different properties that may have come to the fore as people engaged with fire in a range of practices in late Mesolithic and early Neolithic contexts and makes suggestions as to how these may have been understood.

5.2 Changing the material world: fire and transformation

Burnt remains encountered within Mesolithic contexts in Britain are frequently within hearths or interpreted as the deposited remains of hearths. This material is often found alongside lithic scatters, structural features, at rock shelter sites and amongst midden material (e.g. Waddington 2007; K. Hardy and Wickham-Jones 2009). The practical
uses of hearths, such as for cooking, providing heat and creating light have been a focus in economic and technological studies of prehistoric hunter-gatherers (examples). However, hearths can also have a social role in the (re)production of society, identity and cosmologies in both everyday life and special events. These roles stem from the ways in which fire is understood by specific social groups and in specific contexts. Within this section hearths at two late Mesolithic sites are considered in terms of their construction and use but also the transformations enabled by fire within these features.

5.2.1 Hearths in practice: everyday uses of fire in the late Mesolithic at March Hill.

Work at March Hill Carr by Spikins (2002) revealed a group of four hearths, dating to the late 5\textsuperscript{th} millennium BC (Spikins 1999). A number of activities were shown to have been carried out at each of the features. Hearths one and two were surrounded by stone settings and were the focus of knapping activities with a range of tools being produced. Charcoal and burnt flint were found in, and around, the third hearth, which was set into a small depression and seems to have been used solely to heat flint. Hearth four was the largest feature, and its elongated shape led to an interpretation that the feature was used to slowly cook meat (Fig. 5.2; Spikins 2002; Manzi and Spikins 2008). The activities centered on these hearths, and their practical use, is tangible in both the structure of the hearths and the material remains within and around them. Each activity would have required a different sort of fire and, as people manipulated and worked with these fires, specific properties would emerge, guiding understandings of both fire, smoke, and the practices in which they were engaged.
A further hearth and small number of lithics were found 200 m. to the north of the cluster, at a prominent location in the landscape at March Hill Top (Spikins 2002). The lack of an obvious practical role for this fifth hearth challenged the excavators to consider the broader role of fire and hearths. Using ethnographic studies of the hunter-gatherer Selk’nam groups of Tierra del Fuego, Manzi and Spikins (2008) were able to suggest an interpretation of these five features that considered both social and practical roles. Some detail of the ethnographic material used in that interpretation is
presented below, to demonstrate the value of such an approach. However, through a more detailed consideration of the fires lit in the hearths at March Hill and the properties that may have been experienced, it is perhaps possible to say more of how fire was understood by those engaging with it. Rather than rejecting the suggestions of Manzi and Spikins, this section builds on their approach and offers more nuanced interpretations of the interactions between fire and people. To that end, it is important to first present some of the ethnography that Manzi and Spikins (2008) utilised.

Fire is central to the lives of the Selk’nam, and everyday tasks involved in maintaining hearths are a collective activity carried out by groups, rather than individuals, and so act to maintain the group. As the Selk’nam move around the landscape the establishment of a hearth is the first task carried out when arriving at every site demarcating the camp. This fire and those at the centre of structures are kept alight night and day, a task often given to young men as a rite of initiation. (Manzi and Spikins 2008, 84-86). The maintenance of these fires reinforces a group identity through a shared hearth and common practice, but also provides a mechanism for rites of passage that both define, and include, young males. As these young men tend and fuel the hearths, the subsequent health of the fire may be understood as a sign of life, maturity, and perhaps masculinity; the result of an interaction between people and material and a successful transition.

The relationship between fire and transitions also features in ceremonial practices associated with death. When the inhabitant of a hut is close to death their belongings are burnt in a fire, around which their relatives gather to wait for their passing.
Particular emphasis is placed on bows and arrows which are broken before being placed in the flames. Once the person has died, they are buried inside the hut before the structure is burnt down (Manzi and Spikins 2008, 89). The role of fire in these practices is complex: it is used to communicate the death of a person through the destruction of their belongings, body, and home; as a transformative medium that removes the dead from the living world; and it acts to bring people together in practices that could be argued to cleanse and repair the group.

More broadly, many ceremonies are carried out by the Selk’nam in a communal structure, the Great Hut, in which a large hearth forms the centre. During these performances spirits particularly associated with fire rise from the hearth. *Hashi* is an evil spirit who disrupts daily life and threatens the group by extinguishing fires, while *Yosi* is an ancestral spirit who is associated with collecting of firewood (Manzi and Spikins 2008, 89). For male initiation ceremonies a special hut is built with a hearth at the centre. A particular smokeless fuel is chosen for the fire, to emphasise the secrecy surrounding the events, and a boundary drawn through the heart of the fire materialises specific social groups within the community (Manzi and Spikins 2008, 86). At these social events the visual spectacle of fire aids in the creation of memories in which cosmologies and identities are recreated.

The experience of the hearth as a manifestation of spirits perhaps draws upon the understanding of fire as connected to other realms. The emphasis on firewood, in the case of *Yosi*, associates fire with the ancestral past and reinforces the place of fire, and the need to maintain it, as key to the safety and survival of the group. This shared
ancestor and vital shared task in turn maintains the social group. Fire is experienced by the Selk’nam as vital and life-giving; connected to ancestors and able to transform dead people, objects and structures. The existence of spirits who aim to extinguish fires, emphasises the need for regular tending bringing the phenomenon into a close relationship with people that encompasses more than functional perceptions of this material.

The varied uses of fire by the Selk’nam, in both routine and ceremonial spheres, incorporates both social and practical roles that are too often condensed into functional descriptions in archaeological narratives. For the Selk’nam, hearth fires can structure activities and space, and they provide a focal point for gathering and conversation. The physical properties of fire, such as warmth and destruction, are experienced alongside properties such as the power of transformation, the ability to sustain the group and materialising connections to spirits and ancestors. This understanding of fire is drawn upon and recreated through everyday activities and special ceremonies. Fire acts to socialise the group and aids in the reproduction of shared cosmologies and lifeways, it is vital to the continuation of the group physically and socially.

Returning to March Hill, this ethnographic detail led Manzi and Spikins (2008) to discuss the Mesolithic hearths from a social perspective. They highlight the stone settings around hearths one and two suggesting that they were constructed to contain the fire and stray embers, allowing people to move around the features and gather together while they work, as reflected in the lithic refit patterns (Fig. 5.3). In addition
to enabling movement and congregation, I suggest that the stone settings reflect fires that made certain tasks possible through the provision of light and warmth. Cores, knapping debris and microliths recovered from the area in and around these hearths represent actions that were facilitated by a fire that was in close proximity to people. It is this enabling characteristic that encouraged people to draw together around the fire.

People gathered around these hearths to work pieces of stone, in a practice that was enabled by fire, and formed connections between fire, stone, and people. These were intimate experiences that involved characteristics and aspects of the fires that may have left no trace. The intensity and colour of the flames, amount of smoke, direction of the wind, and shadows cast by the light of the fire, are transient properties that are easily forgotten when considering the archaeological record. Similarly the interactions between people that a hearth requires, such as the collecting of firewood, the regular addition of fuel, the actions of tending a fire and the interactions fire enables, are part of the experience little mentioned in our interpretations.

As a focus, these hearths would encourage people to interact and engage in conversation producing a kind of sociality that was brought into being, and perhaps embodied by, the fire. For those at March Hill the experience of light, warmth, sociality and a central role in the lived world will have guided how the fires in hearths one and two were understood; perhaps as familiar and enabling, bound up with activities that transformed stone, with ideas of making, the group, and ideas of the
‘home’ through shared attributes with the hearths at the centre of Mesolithic structures (e.g. Morton, Fife; Newton, Islay; Howick, Northumberland).

In a similar manner, hearth four contained a fire that enabled transformations, in this case of animal bodies, and through this, conviviality among people as food is shared. Alongside a number of fire-cracked stones, the hearth contained significantly more

Figure 5.3 Plan of excavated features at March Hill Carr showing lithic refit patterns.
(After Spikins et al 2002, 1238)
charcoal than any other feature suggesting it may have been used to cook food, specifically meat (Spikins 2002). The type of fire required for this process would differ from those in the other three hearths at the site, and different fuels are likely to have been used to ensure the desired properties came to the fore. An emphasis on heat rather than light; on the longevity of the fire and on containing the heat produced would require the skilled manipulation of fire and would result in a different experience. The transformation of food would have been less visible than that of fuel. Rather than light, the power of fire was expressed through temperature and the material transformation of the cooking process.

In many non-western societies the relationship between animals and humans does not fit into the nature/culture dualism of western thought. Within animistic ontologies for example, animals can be considered to be persons, relatives, or supernatural beings that enter into social relationships with people often based on systems of reciprocity (e.g. Descola 1994; Ingold 2000a). Despite such anthropological insights, Conneller (2011) has highlighted the continued perpetuation of the nature/culture dualism in archaeological studies of animal materials, through their analysis as environmental resource or symbolic media. These two approaches are routinely separated and both neglect the animality of the beings from which the materials originate (Conneller 2011, 50).

Instead Conneller (2011) uses a symmetrical approach to animal materials that emphasises human-animal relationships as key to considering the processes and interactions that involve animal materials. Following this approach, the animals
cooked in hearth four were unlikely to have been understood simply as an economic resource rich in calorific value. Knowledge of the particular species, their behaviour, histories, identities and their role in cosmologies will have affected interactions with these beings, and how the activities in hearth four were understood.

The transformation of the animal corpse by fire may have been conceptualised in a similar way to the transformation of human bodies through fire, with the soul of a being released to return to other realms, places or bodies. Correct methods may have been necessary to successfully complete this process and the production of a suitable fire would be central to this transformation. The release of the animal soul and correct treatment of the corpse when enacted within a system based on reciprocity may have been vital to the success of future hunting activities. Unlike human cremation however, the transformation of a potent animal corpse, to safely edible food, may have been testament to the power of fire through its ability to complete these sensitive processes.

In contrast to the light and visible fires in hearths one and two, hearth four will have employed hot stones charged alongside the fire itself, to slowly cook the meat within a covered pit feature. However, the proximity of hearths one, two and four suggests that the fires they held may have been understood as sharing similar properties, such as their warmth and connections to the living world. All three hearths also enabled activities and transformations, and are likely to have encouraged sociality amongst those present. However, it is interesting to note that although refits amongst the lithic material are distributed around hearths one, two and four few extend towards the third
hearth. Not only was physical distance created between these hearths, but it would appear that little activity took place in the vicinity of hearth three.

Spikins (2002) suggests that this hearth was used to heat flint and the nature of this process may explain its isolation. When heated, the crystalline structure of flint is physically altered causing the material to fracture more cleanly when worked. Too much heat however, can cause cracks, fractures, breaks and, in some cases, explosions to occur introducing an element of risk to the practice and offering a practical reason for the separation of hearth three. A range of factors can affect the success of this process including: the size of flint pieces; the temperatures reached; the duration of the heating process; the rate of heating, and; the rate of cooling.

Experimental studies have often concluded that a slow and steady approach would have been required to achieve the desired effect and to avoid thermal damage to the stone (e.g. Olausson and Larsson 1982; Domanski and Webb 1992). They suggest that the flint should be surrounded by embers in a pit but held in an earthen buffer to restrict the temperature and slow the cooling process (A in Fig. 5.4; Mercieca and Hiscock 2008). Careful preparation and constant monitoring of the construction is required with new embers added regularly. This method is time consuming and labour intensive: Ahler (1983), for example, reported that to successfully heat flint it took 48 hours to heat the material sufficiently and a further 20 hours to safely cool the pieces.
I would argue that this established narrative is not reflected in the evidence found at March Hill Carr. The shallow depth of hearth three, (c. 0.2m; Manzi and Spikins 2008, 89) would not be suitable for a slow and steady method and, although it is not clear if all hearths were in use at once, there is certainly a suggestion that multiple activities were occurring at the site. People seem to have been cooking food in hearth four, gathering around the light and warmth of hearths one and two while making tools, and carrying out tasks such as the collection of fuel and tending of fires. It seems unlikely that constant monitoring and tending of the fire in hearth three took place.

Mercieca and Hiscock (2008) have suggested that rather than one optimal method for heating flint, a range of practices can be used with the specific materials used, the size of the stones being heated and the temperature of the fire, all affecting the method required. They highlight the rapid strategies described by Griffiths et al (1987; also see Lee 2001; D. Coles 2009) that require little preparation or maintenance to achieve the successful heating of small pieces of material, such as cores or blanks (B and C in Fig. 5.4). During these experiments, occasional tending of the fires was required and an improvement in the flaking behaviour of the flint was apparent after only 30 minutes (Mercieca and Hiscock 2008). Whilst faster and less demanding of attention during the process, the method requires similarly sized pieces of flint to be produced and skilled engagement with fire to ensure the effects are consistent. A rapid method is more likely to have been used in hearth three. The hearth would only need to be fuelled intermittently and other activities could be carried out elsewhere. Transformed
flint would have been available more quickly to those working around hearths one and two.

Figure 5.4 Diagram showing a range of methods for heating flint: (A) deep pit with earth buffering the flint pieces from the surrounding embers, (B) small flint pieces dropped directly into cooling embers and ashes, (C) small flint pieces buried in a shallow pit immediately below a small fire. (after Mercieca and Hiscock 2008, 2637 Fig. 3)

A further dimension can be explored in relation to the material interactions in hearth three. In recent decades, the significance of stone as a material has been suggested
through studies of flint artefacts and stone monuments, particularly in regards to Neolithic communities (e.g. Bradley and Edmonds 1993; Cooney 2002; 2005; Tilley 2004; Pétrequin et al 2006). The relationship between stone and significant places within the landscape has been explored by Paul Tacon (1991), in his studies of Aboriginal groups in Western Arnhem Land. For these communities the landscape is understood to be made up of tangible traces of the actions of ancestral beings, with stones from different sources being understood in specific ways related to this landscape cosmology. Jones (2005) has similarly shown that particular sources of stone within the landscape were associated with specific groups or households at the Barnhouse settlement on Orkney. By using stones from different places as temper within pottery, Jones (2005) suggests that connections could be made with ancestors and kin, and within systems of exchange. As Conneller (2011, 79) comments this study is important in moving the focus from special objects to stones in an everyday context. Stones are shown to embody places and therefore also identities, people, relationships and cosmological understandings of the world.

Hearth three at March Hill Carr similarly involves flint in an everyday context where the connections to places and people are brought into a transformative process involving fire. A similar relationship will be explored later in this chapter in relation to hearths found within the shell midden at Cnoc Coig, Oronsay however, whereas that discussion focusses on different stones from that landscape and their deposition at the site I focus here on the specific relationship between flint and fire and how it may have been understood through the tangible properties displayed during the heating and cooling processes.
The molecular structure of flint is not the only aspect that changes when the material is heated. The colour and texture of the stone alters and the visible effects of over-heating include cracks and fractures. As mentioned above exceptionally high temperatures can also damage flint, to the point that they explode, which may offer one reason for the isolation of this hearth. However, I would suggest that the transformation itself, and the materials involved, may have also required a remoteness from people and the living world. The risk of a failed transformation that could materialise as a potentially dangerous action may have led to the interaction between fire and flint being understood as particularly dangerous.

Changes in the colour of flint may have particularly contributed to this perception of the practice. Heated flint often becomes white in colour, as it was in hearth three, and, alongside a cracked appearance, the stones may have been comparable to cremated bone (Fig. 5.5). The process of heating flint may have been perceived as a similar transformation to that of bodies in fire. As will be discussed in chapter seven, the cremation of bodies is often considered to involve dangerous materials. The use of fire and smoke to transform human bodies demonstrates the perceived power of the phenomenon, and it may be that this power was called upon to enact the sensitive and risky process of transforming flint.
The four hearths at March Hill Carr represent a number of different activities and processes that involved fire. A fifth hearth, excavated by Spikins (2002) was found at March Hill Top, uphill from the four features discussed so far. The hearth is of a later date to those at March Hill Carr and although it had been reused on several occasions only a few lithics were found in the vicinity. While the presence of flint flakes and unfinished tools attest to some activities, the intensity of action seen around hearths one and two at March Hill Car is not replicated. These might perhaps indicate a single person working flint or the deposition of token representations of the activities occurring elsewhere and the people involved. As discussed briefly above, stone may have been understood to materialise places, people and identities. The deposition of
worked stone at this hearth may have drawn on these properties to create landscapes through these connections.

The hearth at March Hill Top was in an exposed position and the specificities of the location along with the use of a distinctive fuel would have produced a fire that created little heat, but a large amount of light suggesting that the visible attributes of fire were being specifically called upon. The highly visible location of the hearth, and the particularly bright fire that was created, has led to suggestions that the feature acted as a communicative device (Manzi and Spikins 2008, 94). This may have involved specific groups within the landscape, or more generally communicated to a broad area. In the same way that smoke travels and carries events to those not in close proximity to the fire, this fifth hearth may have similarly conveyed movements, activities and events to others. This should not be limited to people but may have included other beings that dwell in the lived world, or those in other realms. The actions, places and people that were manifest in the hearth at March Hill Top were extended both physically and visually through fire and smoke.

Described as five hearth features, and accompanied by lithic and charcoal reports, the sites at March Hill could easily fall victim to the functional interpretations that have been dominant in Mesolithic narratives. Using the analogy of the Selk’nam, a more social consideration of the hearths presented by Manzi and Spikins (2008) highlights movement, structured activities and social interactions. Drawing on the ethnography of the Selk’nam it would be possible to interpret the hearths at March Hill as the material representation of fires that were understood as key to sustaining the group:
vital to both physical and social survival and part of shared cosmological knowledge. I would argue that this interpretation can be developed, and it could be suggested that within this understanding fire may have been seen to hold life-sustaining properties embodied in warmth and light and the characteristic of (re)making the group through its role in everyday practices that recreated these understandings and encouraged sociality. However, while this interpretation may be valid for hearths one and two its application across all uses of fire at this site would ignore the subtleties of the different practices seen at March Hill. This is where a detailed consideration of the properties of fire can contribute.

By considering the different properties of the specific fires that emerged within this interpretation it has been possible to think about the complex way fire may have been understood. This particularly involves the interactions, process and transformations each fire was involved in. The range of activities seen at March Hill operate at a range of temporalities, from the slow cooking of food in hearth four, to the quick burning fires in hearths one and two. These temporalities carry into the tending and fuelling each fire would require with the different activities creating rhythms of movement at the site. These actions connect to other people, materials, tasks and places, all of which, through movement and practice, create the landscape beyond the hearth site. The spatial patterns of hearths and lithics at March Hill perhaps suggest something of how the variability of fire was understood by those in the late Mesolithic. The three hearths involved in the production of food, light and warmth were in close proximity to one another and formed a focus for human activity and
sociality. In contrast, the fire that dealt with a dangerous transformation was set apart away from the lived, social world.

At March Hill interactions between people and fire enabled human practices, encouraged sociality, carried out powerful transformations and perhaps facilitated a kind of communication. As people interacted with the different fires a range of properties and specific characteristics would have emerged. I would argue that social, enabling and transformative characteristics might be thought of as properties of fire, as much as temperature or light: a mute intense fire might hold the property of transforming flint, whilst bright fires enabled action. Importantly the properties of each fire not only changed with the context of its appearance but through interaction with people and materials. The process of creating a kind of fire and bringing forth specific properties, brought fire into a close relationship with people. Through these interactions the way in which fire was understood in relation to broader cosmologies was recalled through practical knowledge and remade through everyday practices.

5.2.2 A new ingredient: the earliest Neolithic and pottery production

In contrast to the small hearths discussed above the existence of pottery in the earliest Neolithic is testament to the occurrence of larger firing events that transformed worked clay into ceramic pieces. Variations in clay fabrics and the bonfire created, including the temperature of the fire, the duration of the firing, the rate of firing, and the porosity of the fabric, can affect the outcome of this process (Hodges 1962, 63-64). In a similar manner to the hearths on March Hill specific fires must be created to successfully complete this process. Both the temperature and duration of a fire is
affected by the amount and type of fuel used. Peterson (2003) has determined that wood, dung and grass were the fuels predominantly used during the earliest Neolithic. These fuels would produce different types of fire: Peterson (2003) suggests that moderately high temperatures would be reached using dung as the main fuel in long firings, while grass would only create a low temperature, meaning a slow firing would be required. Wood as the main fuel resulted in a fire that reached high temperatures but would burn out rapidly, and would also be more technologically complex to work with.

The gathering of fuel, tending of a fire, and other activities involved in producing pottery, would have required people to gather together to complete the process, probably in larger numbers than the hearths at March Hill. It could be argued that this is a further example of sociality being brought about by fire. People would work to build the bonfire, gather the fuel and, as the firing took place, maintain the fire. Learning, discussion, congregation and other activities and interactions would have taken place, further emphasising the social and convivial properties of fire. The fire may have come to embody this process, the movements, actions and connections involved. The process of producing pottery, bringing people together and encouraging social relations, may have been an important event for establishing larger groups and communities, emphasising new shared ideas and understandings of the world.

To consider how fire may have been understood in the production of pottery, it is important to think about how other materials involved may have been conceived. The
procurement of clays and temper materials may have involved the return to a remembered location where the earth held particular properties. As has been suggested for sources of stone, the source of particular clays, with distinctive inclusions and colours, may have been significant and understood in relation to cosmological schemes. In the earliest Neolithic a number of different sources may have been used by those new to the process or working in unfamiliar areas. While extracting and working these materials, the very actions of those involved would create a place within the broader landscape. For a mobile community familiar with the landscape they moved around, the creation of these new places may have been a process by which new practices and technologies were inscribed and materialised by the group and part of the mechanisms whereby new technologies and ideas were established in the earliest Neolithic.

Peterson (2003, 133-137) suggests that the sampling of clays and temper materials seen in the earliest Neolithic is reflected in the correspondingly large range of techniques found in the archaeological record. Similarly many of the firing traditions Peterson (2003) identified were overly-complex and are suggested to indicate the experimentation in pottery production that is typical with the introduction of new technologies. It may also be that the complexity of pottery production was in part due to the way in which Mesolithic groups perceived and understood the technology. Rules surrounding the procurement of materials, their use, and the mixing of different materials, such as clay, shell, stone and fire, may have contributed to the non-technological choices evident in the vessels they produced.
Specific reactions that occur during firing can be detected in the resulting pottery and allow something to be said of firing events. The clay material itself, for example, loses its plasticity as the temperature increases, which causes the vessel to shrink. The porosity of a clay affects the amount of shrinkage that occurs and can be influenced by inclusions added to the fabric during production. These reduce shrinkage during drying phases and in the early stages of firing, however, if over-heated these expand and cause the vessel to break (Gibson and Woods 1997). Different inclusions will expand at different temperatures and their identification in thin section can suggest something of the temperature of the firing, this in turn can provide a clue to the fuel used, the duration of the event and the management of the fire. Bone, shell and stone, including flint and quartz, were frequently used as inclusions in early Neolithic vessels. Flint may have been heated prior to being ground into small pieces in a similar process to that outlined above in hearth three at March Hill. The production of small fragments of stone to use as temper in clay may have drawn upon similar understandings of the relationship between fire and flint, and the same knowledge of how to manipulate this interaction.

Inclusions such as flint and quartz would also be visible in the vessels produced, particularly when broken into sherds. Quartz has been shown to be particularly significant in many societies (see Reichel-Dolmatoff 1997, 256; Whitley et al. 1999, 221; Taçon 1991; Cooney 2002; Pearson 2002, 142; F. Reynolds 2009). The visible inclusion of quartz in pottery may have deliberately drawn on the properties of the stone and the fresh appearance of the quartz seen in broken sherds may have contributed to the way the fragments of pot were treated. The properties displayed by
quartz, and other temper materials, would have been part of the way in which both the complete and broken vessels were encountered and, I suggest, may have been part of how both were understood.

Traces of firing events are materialised in the objects produced and would have been tangible to early Neolithic communities at various stages during the life of a vessel. The gradual transition from malleable to brittle fabric, and changes in colour, would be experienced during failed firings and more completely in successfully produced vessels. When fired, pottery develops a dark core as carbon compounds are oxidised (Peterson 2003, 34) and as vessels were broken different colours in the fabric would have been displayed. Initially a difference in colour may have been clear but abrasion may have dulled this in sherds left exposed. Rather than simply a discolouration in the fabric of pots, different colours may have been understood as a tangible remnant of the firing process, the remains of the fire that created the vessel and the transformations of its production.

The technology involved in managing an open-air pyre, or any fire, to ensure the desired type of fire occurs, to vary the intensity of the heat and flames, and to extend the life of fuel if necessary has been described as a craft that requires skilled knowledge (Pettitt 2010). The skilled knowledge of fire that was drawn upon in the production of pottery is argued by Peterson (2003, 146) to be part of existing long-lived traditions in which fire was used in a range of practices. As the hearths found on March Hill demonstrate, Mesolithic groups were skilled in working with fire to complete complex tasks, including the transformation of other materials such as
human and animal bodies, stone, and wood. The appearance of ceramic technology has been viewed as a significant marker of the discontinuity between Mesolithic and Neolithic ways of life (see chapter two), however, as Peterson (2003, 146) states ‘...the firing of pottery was not really a new process at all. Rather it was the use of a set of established techniques on a new material’. These techniques include the physical fuelling and manipulation of a fire, but also knowledge of its properties and of the transformations that could be brought about when fire and people interacted. These in turn were informed by, and contributed to, the way fire was understood within the world and in relation to cosmological schemes. I would argue that the firing of pottery may have been understood in a way that drew on existing ideas about fire, its properties and place in cosmological schemes, but also contributed to the development of new understandings and changing cosmologies through new experiences of fire and new transformations.

5.3 Renew and Restart: Hearths, Burnt Material and Occupation

The small island of Oronsay lies south of the larger island of Colonsay and c. 10 km west of Jura and north of Islay in the Inner Hebrides of western Scotland (Fig 5.6). During the late Mesolithic the island would have been just over 4 km² (Nolan 1986, 59). A series of five shell midden sites of Oronsay dating to the late fifth millennium BC have been excavated repeatedly over the past 130 years (Anderson 1898; Bishop 1913-14; Grieve 1923; Mellars 1987). More than 50 hearths were identified within the excavated areas of the shell midden at Cnoc Coig, Oronsay (see Fig 5.7). Radiocarbon dates from the site initially frustrated attempts to establish a chronology
for the site due to problems of the ‘old wood’ effect and marine reservoir corrections. The incorporation of stratigraphic information and existing radiocarbon dates into a model subjected to Bayesian analysis has however, allowed a more precise chronology to be produced (Wicks et al 2014). The dates produced by the analysis suggest that the midden accumulated over a few hundred years beginning between 4440 – 4050 cal BC (posterior density estimate 95%) and ending with the latest activity around 4250 – 3880 cal BC (posterior density estimate 95%).

A pre-midden phase at Cnoc Coig occurred sometime in the fourth century of the fifth millennium BC (4690 – 4360 cal BC to 4660 – 4350 cal BC 95% probability; Wicks et al 2014) and was clearly separated from the midden deposits by a shallow layer of wind-blown sand. Phase one of midden activities featured a semi-circular structure and hearths that had been reused multiple times. The midden deposits were closely associated with these features and were made up of shell horizons that appeared to have been rapidly deposited, forming consecutive, dense accumulations (Mellars 1987; 223). Repeated lenses of heavily burnt shell and ‘other burnt materials’ (Mellars 1987, 223) within the deposits to the west of the midden were interpreted as debris from the clearing out of hearths. Similar deposits of ‘hearth scatter’ were present in Phase two which appears to have been centred on the same structure and a number of superimposed hearths. Only one radiocarbon date from charcoal is available for this phase and marks the interface between phase two and phase three (4690 – 4340 cal BC, 95% probability; Wicks et al 2014). Within the midden deposits of phase two a further layer of wind-blown sand could be interpreted as a single event break in occupation. However, a thin layer of midden material
within the sand suggests that the layer formed over a longer period (Mellars 1987; 225-226).

Figure 5.6 Location of Oronsay and shell midden sites.
The accumulation of deposits over Phases one and two produced a midden that was dome-shaped with steep sides. The deposits of phase three were built up against this dome rather than on top as seen in phases one and two. Material from the phase three deposits produced dates ranging from $4700 - 4160 \, \text{cal BC}$ to $4250 - 4000 \, \text{cal BC} \text{ (95\% probability)}$. The three earliest of the five dates for this phase are from charcoal and as such remain problematic however, dates of $4260 - 4040 \, \text{cal BC}$ and $4250 - 4000 \, \text{cal BC}$ (Wicks et al 2014) were produced from human bone and are likely to provide a more accurate date for this phase of activity. Three to four metres south of phases one and two a semi-circular, stake-built structure within phase three was centred on a series of heavily-burnt hearths. Successive deposits of hearth scatter and midden material were concentrated at the edges of the structure in a manner similar to practices associated with the structure in phase one (Mellars 1987; 227-228).

### 5.3.1 Hearths Past and Present

Many of the hearths at Cnoc Coig featured several distinct episodes of use each of which were separated by horizons of unburnt shells (Mellars 1987, 237). These patterns of reuse are demonstrated by this repeated super-imposition of hearths and the deposits of burnt material found in close association. The hearths at the centre of the two structures were both renewed several times suggesting that fire was central to processes of renewal that were in themselves central to occupation practices (Pollard 2000a). The superimposition of hearths over previous hearths creates a direct connection between past, present and future activities and may have been key in the (re)establishment of place and occupation.
Figure 5.7 Plan of excavations at Cnoc Coig, Oronsay showing identified structures and hearths from all phases (combines data from Mellars 1987, 234; Meiklejohn et al 2005, 90).

Deposits associated with the central hearths in the two structures may also have been part of activities that established these specific and important hearth sites. Beneath the hearth that was at the centre of the structure in phase one a small pit held a red deer.
bone and stone ‘limpet scoop’ (Nolan 1986 particularly figs. 67 and 123) while beneath the hearth at the centre of the structure in phase three a cohesive group of human bone (group three a in Nolan 1986, 67) was found in association with a number of otter bones. Alongside fire in the hearths located at these points in the midden, these materials may have been key in practices that formed connections to past people and actions. Subsequent super-imposed hearths repeated this process of renewal without any identifiable deposits being made. This perhaps reflects a shorter interval between occupations and that each further episode at the same structure was one phase in a longer interconnected period of occupation.

A selection of these materials may have been drawn from the midden itself forming a tangible statement of association between past and present activities. Three limpet scoops were recovered from the pre-midden deposits and, as the interval between this activity and phase one may have been short, an object from this previous activity could have been remembered and easily located at the start of phase one. However, no mammal bones were recovered from the pre-midden layer and it could not have been the source of the red deer bone found beneath the central hearth of phase one. This bone might instead have been connected to people, actions, transformations and places elsewhere. The deer that the bone belonged to, its herd, the area in which it was hunted and the human-animal engagements in which it was involved may have been materialised in the bone brought to Cnoc Coig and deposited beneath the hearth in the structure of phase one. Human bone buried beneath the hearth in phase three may have been collected from the midden itself (see Gray-Jones 2011 for a discussion of this). The proximity of a further group of human bones (Nolan 1986, 87) could
suggest that the hearth and structure of phase three were located in an area of the midden where excarnation had previously occurred. The location of bones in group three (a) could also suggest that some were left *in situ* whilst others may have been contained within a feature or container (see Figs. 5.8 and 5.9 B).

*Figure 5.8 Plan of Cnoc Coig midden showing excavated areas, hearth features and recording 'lanes' 5 and I (after Nolan 1986). Nolan created nominal lanes of 1m wide when analysing the data from Cnoc Coig. The resulting plots displayed all finds within the width of each lane in one vertical view*
Figure 5.9 Plots of hearths and selected finds from 'lanes' 5 (A) and I (B) at Cnoc Coig. The section of lane 5 (A) shows the hearth from the structure of phase one while lane I (B) shows the hearth from the structure of phase three. (Constructed from images in Nolan 1986).
In the process of gathering together human and otter bones or a stone limpet scoop the transformative properties of the midden would have been experienced, perhaps alongside an act of recalling the social biography of the site. These actions and deposits formed connections between people and the past however, it was through the establishment of a hearth that the activity was resumed and perhaps how these connections were sustained. Both fire and smoke are also known in some societies to hold the property of communication to other realms and it may be that through use of the central hearth connections and communications to the past, and future, were repeated through everyday practice.

Evidence of fire at Cnoc Coig is not only found in the form of hearths but in burnt materials deposited within the midden for example hearths found in situ in the midden were marked by areas of burnt shell (Mellars 1987, 234). These were tangible traces of past actions and people including those who were known and remembered and perhaps also from a more distant past. Within the Aboriginal cosmology, and the sacred geography of Uluru, areas of lichen are thought to be evidence of smoke from past fires at camp sites of Sleepy Lizard, an ancestral being (Mountford 1965; Reynolds 2010). Whether left by spirits or people, the burnt objects, materials, soils, ashes and charred places that are the result of fires or burning events preserve traces of past practices and transformations (Zbikowski 2002, 433). Changes in the form of materials, their states and properties would have been experienced as they were heated or burned and their transformation through fire may have demanded a re-conceptualisation of the materials and places involved. By considering how burnt or
fired materials were treated at Cnoc Coig it may be possible to think about how this transformed material and fire itself was understood.

Burnt materials commonly found at Mesolithic and Neolithic sites include ash, burnt chalk, charcoal, carbonised organic material and a range of ‘black’ soils. Rather than consider these as fixed or final forms these materials may have been understood to still be active, undergoing further changes through processes of deposition, destruction and decay. As a material moved through this process, a range of properties would emerge affecting the way in which these materials were understood, and their place in practices and cosmologies. In the discussion of hearths earlier in this chapter, a more nuanced picture of activity at the site of March Hill was suggested through a consideration of the different transformations and interactions between people, fire and materials at the site. How fire was understood by those engaged in the different activities and how the material variously acted to socialise, transform and (re)create identities are questions I would like to ask of the burnt materials at Cnoc Coig.

Deposits of burnt material, including charcoal, burnt shells, burnt fish bone, and burnt stone, were suggested to have been ‘swept’ from hearths formed discrete horizons within the midden material (Mellars 1987). These deposits suggest that the hearths themselves were repeatedly cleansed and re-established (Cobb 2004). Alongside the role of the hearth within broader practices of renewal more regular cleaning and resetting of a hearth may have been important in sustaining the group. The care taken to deposit the burnt material collectively suggests there was some importance in
containing the material perhaps reflecting both the significance of the process of transformation, and the changed properties of the material. Mellars (1987, 234) notes that areas around the *in situ* hearths were distinct due to the marked change in the shell deposits. Burnt shell is extremely friable and grey in colour, and deposits below the hearths became compacted as shells were broken down (Mellars 1987, 234). Experience of this ongoing transformation of the midden itself or other burnt materials may have contributed to an understanding that they were unstable. The changed experience of burnt shells would also have demanded reconceptualisation of these materials. Transformed material that was both conceptually and physically volatile may have been removed from hearths to allow the material to be contained and bring about the renewal of the hearth itself.

### 5.3.2 Fire and Stone: the Shore and the Hearth

In the earlier levels of phase one at Cnoc Coig stone arrangements formed uneven platforms measuring up to 1.5m in diameter around the larger hearths (Mellars 1987, 237). This included the hearth at the centre of the structure in this phase. The majority of the stones in these settings were heavily burnt beach pebbles, although some pieces of local bedrock had also been used. Also associated with the large hearths in these levels were discrete clusters of stones set into small cup-shaped depressions in the sand below the earliest midden deposits (Fig. 5.10; Mellars 1987). The stones in these clusters were exclusively heat-fractured beach pebbles (Mellars 1987, 239). Additionally, around the perimeter of the central hearth in the structure of phase one a number of small pits filled with heat-affected beach pebbles were found (Mellars...
1987, 238; Nolan 1986). These had not fractured and were interpreted by Mellars (1987) as cooking stones stored for later use.

Figure 5.10 Two of the stone clusters recorded at the base of midden deposits (c. 0.2m in diameter). Each featured between 15 and 20 heat-fractured beach pebbles. (Mellars 1987, 237, Fig. 14.22)

In the earliest levels of phase one burnt beach pebbles were found within all three types of feature (settings, clusters and pits) and heat shattered pebbles were incorporated into the midden material throughout (Nolan 1986). The practices that resulted in the creation of these burnt stones would have involved interactions between people, fire, smoke, stone, the shore and the sea. These activities, will have been guided by, and understood through, a practical knowledge drawn from
cosmological schemes. By tracing the trajectory and biography of these different materials the properties that may have been perceived can be considered. The contexts of their deposition can similarly offer insight into how these materials and processes were understood.

Mellars (1987, 239) commented that the beach pebbles were not of any specific rock type and no pattern relating to colour of the stones was apparent. The pebbles could have been collected from the shoreline or from storm deposits such as those noted on the eastern side of Cnoc Coig. Collecting the stones from either of these locations would have created specific connections and the stones themselves may have held properties related to their source. Those recovered from storm deposits may have been perceived differently to those from the shore, perhaps understood in relation to ideas about the strength and power of storms and the sea. In a similar manner stones collected from the beach may have been understood to hold properties specific to that location. The shoreline has often been described as an unstable and potent space of liminal nature due to its location at the boundary between the landscape and seascape (e.g. Pollard 1996; Scarre 2002a; Cummings 2003). This Cartesian separation of land and sea is problematic when discussing prehistoric communities (this is further discussed in chapter six and see also Cobb and Ransley in press). The characterisation of the shore as liminal on the basis of separate land and sea ‘-scapes’ cannot be maintained and I suggest in chapter six that it is the changeable and unstable nature of shoreline areas, with properties of water and land, that encouraged a sense of liminality.
These associations may have been part of how materials from the shore were understood, including beach pebbles. As Fowler and Cummings (2003, 5) have discussed the appearance and texture of water-worn stone is particularly fluid and may have meant that the pebbles were understood to have properties of both water and stone. When collected damp stones may have had a smoothness that diminished as the stones were exposed to heat and dried. Properties associated with water or the sea may have emerged again if the stones were plunged into fluids as part of cooking or processing activities. Experience of these different changes and properties may have suggested a material that was variable and easily transformed by powerful material elements such as water and fire.

While discussing the perception of water and stone in the Neolithic of the Irish Sea zone Fowler and Cummings (2003) highlight the associations between water and the dead. In relation to megalithic monuments the use of materials such as beach pebbles is suggested to have made connections to liminal areas and have been part of practices that involved transformation and fragmentation, of the living and the dead. The association of the sea and water, with the dead and spirits is seen in many belief systems however, ideas of containment, protection, renewal, cleansing and purification are also often understood to be properties that the sea, and water, hold. These different properties and conceptualisations of water emerge in specific contexts and interactions. Practices that involve the deposition of human remains in water often involve a belief that connects waters with the underworld and the dead but also draw on properties of containment, fragmentation and purification. This is discussed further in chapter six but it is mentioned here to highlight that Mesolithic groups are
likely to have held similarly complex understandings of the sea, the shore and materials collected in this area.

The changeable character of beach pebbles and their origin in an unstable area are unlikely to have been the only ways in which they, or the beach, were understood. Activities in the shore area would have included the gathering of shellfish, hunting and perhaps harvesting of kelp, alongside the collection of beach pebbles. These actions involved foods that may have been perceived as provided as part of a reciprocal cycle of sharing and as groups worked together social relations would be renewed during these everyday interactions between people, materials and place. The timing of tides may have meant daily lives were centred on time spent in this area. While the shoreline may have been changeable and potent it was also an important place where groups assembled regularly and socialised while gathering food and materials that enabled activities elsewhere.

Once collected from the shore, the beach pebbles were involved in activities centred on the hearths in the earliest layers of phase one at Cnoc Coig, and stones heated in the hearths would have been transformed both physically and conceptually. As discussed regarding the hearths on March Hill the light and warmth of fire facilitates action and can encourage people to gather together. The cooking and provision of food also encourages people to come together as a group and reinforces social identity. Through their involvement in cooking or heating activities the water-worn stones would become bound up with social as well as economic processes. The use of the stones in activities through which they were transformed, and that transformed
other materials, perhaps including animal bodies, is likely to have resulted in them being conceptualised in a different way to when they were found on the beach. Fire may have been seen to transform the stones physically, in terms of texture and colour, and may have been understood to charge them with warmth and power in a manner that meant they held properties of fire that enabled them to transform other beings and materials.

The role of the sea at Cnoc Coig in the provision of food may have given it properties associated with vitality, creation and renewal: properties often associated with both water and fire. The heating of beach pebbles may have enabled both watery and fiery properties to be brought to the fore in smooth, warm, powerful stones. Through the interaction of people, fire, stone and water transformations were brought about that altered materials. Changes in colour and texture of the beach pebbles may have been understood as material signs of an ongoing transformation in which their fluid, watery properties became properties of transformation, heat and fire. The burial of burnt, but not fractured stones in small pits might represent their position as having passed through only one stage in a process that ended with the complete transformation tangible in the fracture of the pebbles.

The fractured stones deposited in clusters may represent another stage whilst the shattered pebbles incorporated in the midden might represent the end of this process. It is interesting to note that stones that had completed the transformation were deposited amongst the processed shell material along with burnt materials from hearths, whilst the fractured pebbles were contained in discrete clusters and buried in
a manner that mimics the way in which they may have been found; in damp sand on
the shore (Fig 5.10). Deposition in this way may have reflected the partial
transformation of these stones that were understood as holding properties of both fire
and water. Through burial in sand, these materials were contained in a context that
acknowledged their ongoing relationship with both the shore and the fire.

By considering the trajectory and deposition of beach pebbles as they came to and
interacted with fire in the earliest phases of activity Cnoc Coig it has been possible to
say something of how the transformation of materials through fire was understood.
The emergence of fiery properties such as warmth and loss of watery properties,
smoothness, shine and wetness may have been understood to reflect the position of
elemental materials in cosmological schemes. The vulnerability of fire when in a
watery environment may similarly have been understood to relate to the complex
construction of the world and shifting positions of key materials. The suggestion that
fire may have been understood as a key element in the lived world is further
demonstrated at Cnoc Coig by the emphasis on hearths in terms of their foundation,
maintenance and subsequent spatial repetition of further hearths. At the centre of
activities carried out on the shell midden on the shore line fire was used to mark
human presence and perhaps bring to the fore certain properties called upon in the
practices that can be traced at Cnoc Coig including the transformation of materials
and bodies from the sea.
5.4 Conclusions

It is perhaps the flexibility and pervasiveness of fire that has been most apparent from the studies I have presented in this chapter. At the hearths on March Hill the range of activities centred on the fires and their different practical uses tangible in both the structure of the features and the material remains within and around them. The skills demonstrated by those working with fire at March Hill and Oronsay during the late Mesolithic represent a practical knowledge that was applied in new practices, rather than freshly learnt with the arrival of new technologies such as the firing of pottery. Working with fire may have been considered a similar process to the production of objects. Specific fires, created by mutual engagement and skilled interactions between people and fire, would have encouraged specific properties to come to the fore. This process would require the expert application of a practical knowledge, not divorced from cosmological schemes, but guided by that understanding of the world. Through action, the working of fires and their use, this knowledge would be recreated, renewing shared cosmological beliefs and making them anew.

It is possible to trace a range of activities in which fire was used and each would have required a specific kind of fire. As people manipulated and worked with these fires, specific properties would emerge, leading to specific understandings of fire and the practices they were involved in. This mutability of fire means that there is not one answer to how fire was understood by people around 4000 BC. Instead it is likely that different types of fire, the way they were used, their contexts, and, perhaps more importantly, the materials they engaged with, produced specific understandings that came into being within those practices. This suggests a more fluid and variable
understanding of fire. I suggested in the previous chapter that the significance of trees and timber similarly had a range of meanings with different species of tree being understood through its specific properties. For the same reason, fire may have been a particularly significant material force within the cosmological schemes of communities at this time.

As Peterson (2003) suggests, the use of fire in early Neolithic practices did not involve new pyro-technologies, but the application of existing skills and knowledge in new contexts and practices. It could be argued that while the techniques involved may have been drawn from established traditions of knowledge, the tasks in which they were employed were of a larger scale than those previously performed. The intimate setting of a hearth is certainly far smaller than a bonfire or burning structure, however, the use of fire to burn areas of woodlands was practised by Mesolithic groups and involved the use of fire at a larger scale.

The ability to effect transformations of a range of materials would have been experienced in the everyday lives of people and may have contributed to the sense of fire as particularly powerful. The deposition of burnt material suggests the significance of both the process from which they are the result, and the way in which this material was understood. The process of transformation will have resulted in materials that held changed properties and offered new experiences. Burnt materials would be conceptualised in a new way and a sense of volatility may have accompanied these changes. Both Pollard (2004) and McFadyen (2006; 2011) have emphasised that materials, like objects and people, have a historical trajectory. Burnt
materials may have been understood as unstable, holding a temporary status before further processes of change and decay. The deposition of burnt material is unlikely to be casual and burnt places may have equally been treated with respect and care.

Transformations may not have been limited to the material world. Both fire and smoke may have held cleansing or purifying properties and an ability to alter people, places and other beings. As a particularly powerful material force that was changeable and unstable, fire may have also been understood as able to straddle or move between realms. The use of smoke and firelight as communicative tools has been suggested for both March Hill carrying activities to those elsewhere, extending those events and actions and perhaps involving more people. The gathering of people and inherent sociability brought out by fire are perhaps two properties that are not immediately obvious. The social interpretation of hearths presented by Manzi and Spikins (2008) was successful in highlighting the interactions amongst people that fire encourages. This property would be equally active among those who lit a bonfire to fire pottery or burnt a timber structure. Amongst people, fire can act as a focus and foster conviviality through conversation, shared presence, story-telling and the sharing of food and drink. It may be this social property that was especially drawn upon by those carrying out large-scale burnings in the early Neolithic in practices designed to both create and renew identities and communities.

The relationship between fire, the living, the dead and ancestors is central to, and perhaps most tangible, in cremation practices. These events are explored in chapter seven using ethnographic insights to discuss the relationships between bodies, wood,
fire and water in relation to examples of Mesolithic and Neolithic cremated remains. 
Before that analysis the following chapter considers water from a material perspective in terms of its properties and the qualities that are often aligned with its many forms.
Chapter 6: Watery places, materials and beings.

The previous three chapters have examined interactions with wood, fire and water in the late-Mesolithic and earliest Neolithic as a way of exploring cosmological beliefs across this period. This chapter explores water as a material prevalent in the lives of communities around 4000 BC. This includes a discussion of the way in which water has been considered within prehistoric narratives and how critiques of functional approaches have begun to produce studies that are more nuanced in their interpretations. New narratives of the interaction between people and the sea in the late Mesolithic have utilised the concept of seascapes, which will be discussed below, but have also recognised the fundamental role that water, including the sea, must have played in Mesolithic cosmologies (e.g. Cobb 2005; 2007; 2008; Cummings 2003; J. Pollard 2000; T. Pollard 1996; Warren 1997, 2000, 2005; Wickham-Jones 2005).

Although Mesolithic shell middens offer a wealth of detail about interactions with the sea, I will explore these in more detail in the following chapter which features an in-depth study of one such midden. Instead the discussion below explores ideas about the sea, rivers and wetlands and considers these different forms of water through activities such as deposition, fishing and travel across water. As in previous chapters this discussion draws upon ethnographic information but does not seek to make interpretations based on direct analogy.
6.1 Water as material and medium

The identification of the shore as a liminal zone by archaeologists suggests that where land meets water was always understood in the same way. However, the broad category of places assigned liminal character, defined by what they border rather than what they are, denies the different forms water can take (also cf. Cobb and Ransley in press for a critical analysis of the notion of liminality at the water’s edge). Within archaeology, the division of watery places into wetlands, marine, riverine systems and coastal landscapes draws on known characteristics to discuss dynamic and varied environments that may not have been classified by physical properties alone. Instead, it is likely that water would have been experienced through the properties that emerged during activities and interactions, and understood within specific cosmological schemes. The Khanty of western Siberia for example, believe water to be animate when flowing in the river, but inanimate when contained in a bucket. The property of movement is key; falling snow is animate, whilst fallen snow is not (Jordan 2003a, 103).

Interactions between people and water would have been an everyday occurrence and likely to feature water in a range of states and contexts including; rain, rivers, hail, lakes, floods, oases, swamps, bogs, springs, wells, rapids, waterfalls, snow, ice and so forth. Water is undeniably a necessity for life and procuring suitable water would have been a daily activity that reaffirmed shared foundations of life. As a physical resource, water can be used in a number of ways to facilitate action and enable other processes, but would also have been dangerous: too much or too little water can easily destroy. Daily movements of coastal groups may have been tied to the
temporality of the sea. Rivers, lakes and wetland environments are subject to seasonal
temporal changes, with winter melts and flooding, and some brooks are only present in winter
months, drying out in the summer. These seasonal changes may similarly have been
markers by which time was measured and lives lived. The importance of water in the
lives of communities living around 4000 BC is unlikely to have been confined to
functional roles, and the ways in which water was encountered, experienced and
understood will have contributed to identities, beliefs, and cosmologies. Water does
not exist in only one form within the world; it is constantly changing and the
experience of its many varieties will have resulted in a complex understanding of
water within cosmological schemes. The many different forms of water, however,
and number of contexts in which it can be found, allow for the material to be used in
many ways to define, maintain and negotiate identities and cosmologies.

Water is fundamental to life and, as such, is pervasive in all societies and for all
forms of life. Features that are the source of fresh water hold a practical importance,
but their significance in society is often concerned with other aspects of these watery
places, alongside their role as a vital resource. In its varying forms, however, water is
also involved in many practices within everyday life. In this way it mirrors both wood
and fire in reaching into different areas of life, connecting places, people and actions.
Different types of water can be categorised and measured by their physical properties:
their ph. level, temperature, organic content, geographic source, and a myriad of
chemical constituents. The way in which water was perceived and categorised by
people during the late Mesolithic and earliest Neolithic is, however, unlikely to have
focussed on these properties. Furthermore, the properties of water and how it was
perceived are unlikely to have been constant for different communities, or in different contexts or practices. Through experiences with the properties of water, different features will have been conceptualised through cosmological knowledge that was renewed through the practices it guided.

Water is unpredictable and unstable, constantly in motion and visibly reacts to interaction with people. It can change rapidly, becoming loud and powerful, threatening to damage people and places, or sit still and stagnate, becoming lifeless and stale. To be on the sea at all can be a position of vulnerability; a myth among the Inuit states that, if a person sits still too long in a boat at sea the boundaries between different worlds will be erased and death will follow ref. The person’s soul will be denied proper treatment and instead will be transported to other realms and take on another existence (Sylwan 1999, 18). For Aboriginal people, the sea is animate and part of a Dreaming cosmology that formalizes places in the world. Maritime practices can occur on the water or on land and act as a mechanism by which maritime identities are reaffirmed. Part of these practices involves the influence on the sea of wind, waves and tides and negotiating with their spirits (McNiven 2004). The sea can be a dangerous place inhabited by spirits of the dead and Dreaming beings such as the Rainbow Serpent who is found in cyclones, waterspouts and large bodies of water (Peterson and Rigsby 1998, 6; McNiven 2004, 336).

Within Balinese Hindu cosmology water is understood to be connected to the underworld and, as such, is the suitable place to deposit polluted remains of the deceased (Downes 1999). This understanding of water, as connected to the
underworld, is not unique; Oestigaard (2011, 46) suggests that water is frequently associated with the underworld, and watery places, such as bogs and springs, are often understood as entrances to the underworld (e.g. Conklin 1993; D. A. Phillips et al 2006; Kaliff 2007). The movement of water and its ability to transport materials may have contributed to ideas that it served as a gateway to the underworld and a way to remove polluted materials from the lived world, in turn giving water the property to envelop and contain dangerous things. The deposition of the remains of the dead in the sea, pools, lakes or rivers, may give these waters the characteristic of carrying death, disease and danger.

The Khanty of western Siberia understand the lower world to be downriver. Water is generally associated with the dead; however, a more complex understanding of water exists in Khanty society. Within Khanty cosmologies, the bear holds special significance and is believed to be an emissary sent to earth by the spirit master and Supreme Being (Torum). When a bear is hunted, its remains must be deposited into water without a current (lakes, swamps and other backwaters are considered appropriate) as the remains will not be disturbed, either in the water, or by the living (Wiget and Balalaeva 2011, 39). This practice involves an understanding of water as a suitable place for the remains of the dead, but also a more specific recognition of different types of water. The emphasis on not unsettling the remains is based on ideas of rejuvenation: if the bones were disturbed, or were not deposited into a wet environment, the process could not be completed (Jordan and Flitchenko 2005, 79). Water then is also a place of protection for the dead where purification and rebirth can occur. The ability of water to purify or cleanse is also used amongst the living;
when a woman has finished menstruating, she uses both water and smoke to purify herself and her clothes, allowing her to return to normal interaction with her husband (Wiget and Balalaeva 2011, 77).

As a gateway to the underworld, water might be understood to hold properties of death, danger, and disease, whilst the use of water as a receptacle for dangerous materials perhaps reflects the power to contain the unstable and polluted materials it cannot purify. The power of water to cleanse or purify suggests that it can effect significant transformations. The physical disintegration of materials in water would have been a common experience for people as they interacted with water and watery places. The resultant changes in materials and water may have contributed to the understanding of water as powerful and able to execute transformations. Among the Yurok North Californian Indians, a series of rules reflects an emphasis on a dual understanding of water as good and bad. The changeable nature of water, especially when mixed with other waters or fluids, seems to have been key to these concepts of good and bad water. Good waters, from which the Yurok caught salmon, could not be urinated in and fresh water could not be mixed with sea water (Douglas 2003, 158).

The classification of water as good or bad is more complex than an understanding solely based on experiences of water combined with other materials. For menstruating women, washing the body clean of polluted fluids offers prosperity, whether enacted in good or bad waters ref. Yurok women could undertake a practice that followed an instruction passed down by the spirit woman. This was recited as women cleansed themselves:
[y]ou will be rich if you wash. You go in, you will be rich…. You will go in, go in the water. Only one time. You will lie with your head downstream. Take a stone. You will take it into your house so you will be rich. (Buckley 1982, 52).

Men who sought wealth performed a similar practice but in good, pure, mountain waters quite different to the bad, polluted waters used by menstruating women (Buckley 1982). This practice did not simply require good or bad water, but placed an emphasis on the people and actions and locations involved. For the Yurok, the properties of water were multiple and contrasting, they are not fixed and an understanding of water was closely bound up with the actions and practices performed. It is not simply the properties of materials that feed into cosmological schemes, but their interaction with people in the performance of activities and practices.

Alongside other possible understandings of water, sits its position as vital for all life. Eliade (1958, 194) connects this life-giving property with those of purification and renewal; the power of water to renew and facilitate rebirth exists in its ability to metaphorically ‘break down’ materials, to bring about their ‘death’ and purify them of past connections and associations before restoration. I would suggest that, if water were understood to purify by deconstructing materials, this would be born from, and reaffirmed by, the experience of materials and bodies transforming in water. These physical experiences of interacting with water may have been drawn upon as a metaphor for cleansing, but I would argue that water may be understood to actually purify souls, bodies and materials rather than be a symbolic referent for process. In
Bakau, Gambia, the belief that water can purify or transform manifests in practices at
the Katchikally sacred crocodile pool, where barren women wash in the waters to
become fertile (Ceesay and Ceesay 2005). These practices involve physical
interactions with water, in which the body is cleansed, but also less tangible
interactions in which water transforms a woman.

The understanding of water as the dwelling place of spirits or ancestors is seen in
many societies and is often connected to its status as the pathway to the underworld,
which is often a watery place in itself, as discussed above (Rouch 1997; Insoll 2009).
Ancestral or water spirits frequently take the form of animals that inhabit watery
places, such as fish, water-birds and serpents (e.g. Drewal 1988, 161; 2008; Winkvist
1996 D.A. Phillips et al 2006; Insoll 2009, 195), and use the water as a medium for
action and communication. In some cases, this involves malevolent or destructive
behaviours. In Pueblo belief for example, horned water serpents travel to the lived
world through waterways emerging at springs. If angered, they can withhold water,
cause floods, earthquakes or landslides (D. A. Phillips et al 2006, 17).

Spirits that inhabit waters are not necessarily bound up with death or pollution.
Amongst the Wari’ of South America, fish are considered to be the physical
incarnation of water spirits. These spirits control the underworld and are allies of the
ancestral spirits that seek to provide food for the living (Conklin 1993). Where a
totemic belief system is in place, water often takes on importance through its role as a
medium allowing connections to the animals it contains (Insoll 2009, 194).
Engagements with these waters and the killing of important animals can be subject to
taboos and ritual activities. In this way, waters are part of complex systems of
identity, social relations and personhood. Multiple spirits can also inhabit waters and
interact with people in different ways. Within the Khanty landscape, a number of
spirits occupy riverbanks, rivers and bodies of water. The fish master, *As Iki*, is relied
upon to bring good luck in fishing, *Iagun Iki* and *Lo Lor Iki* are protectors of two
major rivers, while *Sart Lung* is a giant pike that can bite new canoes, and *Kolja* is a
water demon that sends disease (Jordan 2003a; Wiget and Balalaeva 2011, 107-114).
Offerings are made to good water spirits to bring success in hunting, safe water travel
and to donate fish.

The range of spirits that can inhabit waters reflects the complex relationship between
water and people, the range of practices in which water is involved and the different
types of water experienced during these interactions. The danger of water is reflected
in properties of pollution and disease and connections to malevolent spirits and the
underworld, whilst life-giving, purifying and benevolent properties may be
understood through the powerful, beneficial experiences of water. However, to divide
interactions with water into categories of good and bad is too simplistic: conceptualisations of water are multi-faceted with properties experienced and
understood in specific contexts and performances. As a medium where different
realms meet and people and spirits can communicate, water might expose people to
risk, but may also facilitate requests to generous spirits. The flow and movement of
rivers, and the importance of travel by boat, for example, might contribute to an
understanding of water as a pathway. In the context of mortuary practices, pathways
may be considered dangerous trajectories that lead to the underworld or realms of the
dead, but, when associated with the seasonal migration of fish, the same river path may be bound up with ideas about the provision of food and health of the group. Water is multi-faceted and changeable and the properties experienced as people interacted with water would similarly vary producing complex concepts of this prevalent material.

6.2 Water in the background

The deposition of the remains of the dead in the sea, or rivers, highlights only one type of interaction between people and water. The importance of the sea, rivers, lakes and other bodies of water to Mesolithic hunter-gatherer economies has long been recognised, but the domination of functional approaches to the Mesolithic in Britain has resulted in discussions of water in terms of sea-level change, erosion, as a resource for subsistence and navigation and as a means of transport. Interactions with water have traditionally been part of a broader focus on the relationship between material culture, social adaptation, the environment and hunter-gatherer economies. Water, in these studies, is either a resource or part of the background canvas to Mesolithic lives.

J. G. D. Clark writing in 1948 on the development of fishing in prehistoric Europe includes great detail on technological developments during the Mesolithic, including hooks, traps, nets and both bone and antler points. The species of fish caught, what type of waters they prefer and the tools used in different waters are also discussed (Clark 1948, 50-63). Similar information can be found within the section covering fishing in the Neolithic of Europe, including the development of large timber weirs.
used to take advantage of annual migrations of fish. Fishing in the Neolithic is suggested to have been seasonal, tied to both the migration of fish and the annual cycle of farming. The glut of food produced at one time of year is suggested to have encouraged the use of smoking technologies to allow storage of this resource. Clark notes that Neolithic farmers living in larger groups would have both the numbers and capability to carry out the construction of extensive timber weirs and that specific groups in society may have carried out these activities (Clark 1948, 64-80).

Many studies on the topic of seafaring and fishing continue to focus on the technological choices and equipment used by prehistoric groups and incorporate ethnographic data to explore questions of navigation and the influence of weather on marine subsistence patterns (e.g. Enghoff 1995; Pickard and Bonsall 2004; 2007; Åhrberg 2007). These studies draw out important information about subsistence practices, the material culture and skills employed in these tasks. Within these detailed studies, however, information on the social relationships that fishing both creates and requires, the experiences of fishing at different times of year in different waters, the interactions involved in the practice and how these were perceived. For example, observations on the type of resources available during the year at a particular site can provide insight into the movement of groups around the landscape and suggest a temporality that may have guided those movements.

Aimee Little (2009) has examined the evidence for the economic use of lakes and rivers in the Mesolithic of Ireland and highlighted how movements around the landscape, to and from settlements and out into waterways, create different
temporalities. Some of these rhythms will have been shared with those of water and fish, tying together these material worlds. Little (2009) further suggests that the economic practices involved and the settlement sites reused over years would have played a key role in establishing and cementing social relationships through shared tasks and traditions of reoccupation. Her work successfully integrates economic questions about the use of resources available from these environments with an examination of mobility, temporality and landscape, ultimately placing the use of watery resources within a broader social narrative of Mesolithic societies. This is an example of how the incorporation of landscape approaches in Mesolithic studies has allowed for a critical reassessment of the focus on subsistence and economy (see also Leary 2009). These new directions have also resulted in the development of seascapes within studies of coastal communities and the use of maritime environments.

6.2.1 Seascapes and the land/water dichotomy.

The concept of seascapes draws on many aspects of landscape studies, such as the emphasis on views and visibility, movement, action, traditions of practice, cosmologies, ideas of place, and the constitution of identities (e.g. Cooney 2004; T. Phillips 2004; Oestigaard 2009). Seascapes are understood as temporal and social, brought into being through actions and interactions involving materials, people and other animate beings. Warren (2000), for example, has effectively discussed the movements of people and materials across the sea and how these are bound up with economic activities, social contact and gift-exchange. However, whilst the sea is cited as facilitating trade, it is not discussed in any other sense. Cosmological schemes, biographies and identities are (re)created through movements, actions and
experiences, which are guided by a practical knowledge of the sea and the world. The development of seascape approaches has offered a useful perspective on the relationship between people and the sea and has provided a way to move beyond the economic focus of previous studies. The concept allows an emphasis on the dynamic nature of the sea and a sense of the fluid, changeable and ever-moving nature of the maritime environment (Cooney 2004).

In facilitating new ways of thinking about the sea in the past, the concept of seascapes is successful. Long-standing perceptions of islands as isolated, inward areas and coastal regions as marginal and peripheral, in landscape-based narratives have been challenged by new perspectives on the relationship between people and the sea (e.g. Gosden and Pavlides 1994; Terrell, Hunt and Gosden 1997; Rainbird 1999; Robb 2001; Bailey and Milner 2002; Cooney 2004; Erlandson and Fitzpatrick 2006). Cooney (2004, 324) suggests that thinking about seascapes has also allowed the relationship between land and sea to be considered in new ways. Whilst this may be true, the statement also highlights a theoretical problem that the concept of seascapes does not resolve. Modern, western notions of land and sea as opposites in a Cartesian dualism have been inherent in many approaches to prehistory and the creation of seascapes, as distinct and different from landscapes, only serves to perpetuate this understanding (Cobb and Ransley in press). It has been argued that this separation of land and sea needs to be challenged in our narratives of the past (Cobb and Ransley in press).
The presence of marine materials further inland and the movement of materials across the sea demonstrate the way in which the sea is extended through action (Cobb and Ransley in press). The use of beach pebbles and shells at megalithic tombs, either in deposits or within the construction, is common (e.g. Cairnholy I, Galloway, Piggott & Powell 1949; Crarae, Argyll, Scott 1961, 7-14; Dyffryn Ardudwy, North Wales, Powell, 1973, 10; see also Fowler and Cummings 2003) and smooth flint pebbles from the shoreline are regularly found at Mesolithic sites (e.g. Gwithian, Cornwall, Roberts 1987; Bolsay Farm, Islay, Mithen et al 1992; Kilmore, Oban, Bonsall et al 2009; see also Marshall 2000). These materials may have embodied biographies that include specific identities, actions, people and places. The movement of stone in the Mesolithic and Neolithic is repeatedly argued to create biographies of journeys, places, and people, that are drawn upon in actions and practices involving stone (e.g. Bradley and Edmonds 2005; Cummings 2012; Cobb 2007, 2008 and subsequent stuff). The acquisition of bloodstone from Rhum, or pitchstone from Arran, would have involved journeys across the sea by, or with, those skilled in seafaring (Cobb 2007; 2008). Maritime communities, identities, practices, and specific places would have become part of the biography of both the people involved and the stones transported. These connections would have been embodied by the stone, which may have been considered to hold watery properties that emerged or were active in interactions between people and the material (Cobb and Ransley in press).

At Billown Quarry on the Isle of Man, the earliest activity in the mid fifth millennium BC included shallow pits or scoops (Darvill 2004, 49). This tradition of pit digging persisted into the fourth millennium BC, where a series of pits, dug shafts and scoops
were dug around a ‘D’-shaped ditched enclosure and a post setting with causewayed ditches (Darvill 2002, 77). Water-worn quartz pebbles were found in most of the features. The excavator suggested that the whiteness of quartz accounts for its extensive use. More specifically, the similarity of quartz pebbles to human skulls in shape and, more generally, their similarity to bone in colour, led to the extensive use of quartz pebbles (Darvill 2002, 77).

Darvill (2004, 51) notes that quartz pebbles occur naturally in river valleys and on beaches, yet does not consider whether this watery origin contributed to the way quartz pebbles were used at Billown. I would suggest that their source and the water-worn smoothness of the pebbles may have been central to the way quartz pebbles were conceptualized in relation to cosmological schemes. The stones may have been understood to have certain watery properties that were called upon during activities. Fowler and Cummings (2003) note that the appearance of quartz is similar to that of a frozen, or solidified, fluid and this may have encouraged the perception of watery properties. The actions and events in which stones and other materials were experienced, worked and used may have occurred inland but extended the reach of the sea (Cobb and Ransley in press). However, where this has been recognised, materials have been described as creating metaphorical connections to the sea, without any consideration of what properties the material might have held. The nuances of the interactions that involved these materials is neglected and suggestions of liminal places and states is often applied, particularly in the case of quartz pebbles (e.g. Fowler and Cummings 2003).
The quartz pebbles at Billown emphasise the way that the sea can exist beyond its physical limits. The existence of a land/sea dualism within archaeological narratives suggests that there is an identifiable boundary between land and water. The shoreline, riverbank, lakeside, cave and other places where seascapes and landscapes meet have been described as liminal areas where specific transformations or practices could occur (e.g. Chatterton 2006,116; Scarre 2002a; 2002b; Cummings 2003; Oestigaard 2011). As the point where air, land and water come together, these ‘liminal places’ have been suggested to have been understood as a point where different realms and cosmic axes meet within a tripartite understanding of the universe (e.g. T. Pollard 1996; Helskog 1999). Isolated from the lived world and redolent with power, liminal areas are suggested to have been a suitable context for subversive, dangerous or volatile practices.

In his re-interpretation of the Mesolithic of southern Scandinavia between 7000 – 4000 BC, Strassburg (2000) highlights the parallel liminality of the shore and mortuary practices. Both burial places and the shoreline are potent places that require caution, but enable practices that make and sustain society and cosmologies (Strassburg 2000, 229). The frequent occurrence of burials on the shore is suggested to have drawn on the power of these sites to insulate the world of the living from the threat posed by the dead. Transitional events such as mortuary practices, childbirth and rites of passage occur at this junction between land and sea and other significant liminal points such as promontories or islets (Strassburg 2000, 229-239). Within Strassburg’s narrative, the land and sea, realms of the living, the dead and spirits, meet at the shoreline boundary.
While the concept of liminal spaces is useful in considering areas that were mutable and dynamic, the recurrent theme of places seemingly caught between two opposites is a product of our separation of land and sea (Cobb and Ranley in press). The identification of a boundary zone perpetuates ideas of two separate domains, with a ‘no-man’s land’ between them, seemingly dangerously uncategorised as neither land nor sea and a suitable venue for practices that equally challenge social traditions and categories (Cobb and Ransley in press). McFadyen (2006; 2008; 2011) has argued that, rather than being determined by existing features, places are made through activities and interactions involving people and materials. Places have histories, myths and associations; they are created, remade and altered through movement and action. If there is no boundary, no identifiable line where land and sea meet, then it is perhaps more fruitful to consider shoreline spaces as are and inter-tidal zones as that hold properties of both land and sea. Experience of these properties, as people moved around and interacted with materials, would have been understood through cosmological knowledge, which will have guided further action and practice and provided a moment when cosmological schemes could be reaffirmed or subject to alteration. Through action and interaction, people would have created a specific sense of place grounded in the experience, and understanding, of properties of that place and a history of practice.

Rather than an understanding of place as pre-determined by its location, it was the experience of people in movement and action that formed places, their meanings and histories. The relationship between action, the properties of materials and
cosmological knowledge fostered a sense of place and led to the ways in which places, and future practice, were understood. Places that were used for transitional or liminal activities would have been understood to be suitable for these practices because of the properties they presented as people moved through and occupied these sites. Holding both watery and dry properties and subject to rapid and regular change, the combination, range and unstable nature of the properties in these places may have encouraged the practice of activities involving equally unstable or changeable beings, bodies and materials.

What is key here is that it is the properties of these places which determined how they were used and understood, rather than their location between two separate spheres, or ‘−scapes’, of the lived world. Following extensive study of a boat-building community who lived and worked in a lake-side world that was neither landscape nor seascape, Ransley (Cobb and Ransley in press; see also Ransley 2009) suggested that ‘−scapes’ be thought of as produced through movement, knowledge, action, experience, dwelling and being-in-the-world. It is clear that the division between land and sea, or between land and water, cannot be sustained when lived experience is considered. The two are not opposite and separate, existing as landscape and seascape, but overlap, blend, combine, fuse, mix and emerge in places and during activities.

It is not only ‘−scapes’ that are produced in this way: knowledge of materials with which people interact is created and reaffirmed through the lived experience of action, movement and practice. Concepts of the sea and its role in cosmological
schemes are remade through interactions with the sea in a range of ‘-scapes’ and places. A consideration of what it is to be at sea is therefore useful in exploring how groups in the late Mesolithic and earliest Neolithic may have interacted with the seas around Britain.

6.3 Moving around

As farming reaches Denmark and northern France, the population tail extends across both the Kattegat and the Strait of Dover, thus reaching Scandinavia and the British Isles after 5000 and 5500 years, respectively. This gives a delay in the propagation of approximately 500 years due to the water barriers inhibiting travel to both Britain and southern Scandinavia.

(Davison et al 2006, 641, emphasis added)

The sea has been discussed as being either a barrier that delayed the Mesolithic-Neolithic transition (e.g. Davison et al 2006, above), or as facilitating contact and movement (e.g. Garrow and Sturt 2011). To discuss the extent of maritime interactions with the sea around 4000 BC, it is necessary to incorporate data about the nature of seas at that time to allow more detailed and specific narratives to be produced. Palaeo-geographic and palaeo-tidal models offer the opportunity to understand maritime conditions around 4000 BC, although such models remain an interpretive construct (Garrow and Sturt 2011). Changes in weather patterns and sea levels operated at differing scales and temporalities and increasingly refined
information allows these to be incorporated into archaeological narratives. Tipping (2010, 69), for example, has suggested that there was an increase in storminess between 4500 and 3500 BC, leading to more frequent river flooding, greater erosion of the shoreline and a shift in rainfall patterns. These processes would have manifested at a local level in changing rhythms and wetland environments. It is not inconceivable to imagine that people were aware of these changes within lived memory. In contrast, the rate of the marine transgression that occurred between c. 7000 – 5000 BC, may have, at times, been so gradual that it was little noticed.

Singular events such as large storms would have been spectacular encounters, through which certain properties of the sea and water were emphasised. The Storegga slide, a submarine rock shift off the coast of Norway in the late 6th millennium cal. BC, caused a tsunami that landed on over 600km of coastline in northeast Scotland (Long et al 1989; Smith et al 1985; 2004). The run-up from the tsunami is estimated to have reached at least 25m inland on Shetland and 5m along the mainland Scottish coast, although variations in local topography, such as sand dunes, inlets, rivers and valleys, may have meant the effects were felt further inland in some places (S. Dawson and Smith 2000; Smith et al 2004). The tsunami would have significantly eroded the coastline, uprooted vegetation and caused widespread flooding. It is also estimated that up to 1700km$^3$ of sediment was deposited across the northeast of Scotland (A.G. Dawson et al 1990). Mesolithic sites on the Tay estuary, at Morton, Fife and at Castle Street, Inverness, have all been found to be covered in a deposit of white sand thought to be related to the tsunami (A.G. Dawson et al 1990, 511). At the Castle Street site in Inverness, a collection of 4837 flint fragments (both retouched
pieces and debitage) were found on buried sand dunes and at Morton the tsunami sediment deposit coincided with a suggested shift in activity away from that area of coast (Coles 1971; Wordsworth 1985).

I do not want to suggest here that there is a causal link between climate events and shifts in human behaviour; instead it is the way in which these changes and occurrences may have been experienced and understood in relation to the role of water in cosmologies that I wish to consider. Although probably only lasting a few hours, the tsunami would spectacularly demonstrate properties of the sea. The experience of those hours during which the tidal wave made landfall would have been a vividly emotional encounter with the sea. The sound of the wave, visual impact and demonstration of power and force would have been among a range of properties experienced by those present. In the aftermath, familiar places, watercourses and coastlines may have disappeared entirely, or would have been altered, perhaps to the extent that they were unidentifiable. (A similar discussion is presented by Jim Leary (2013) but about the longer term processes of eustatic sea level rise during the Mesolithic that submerged Doggerland and the Manse)

In the conversations, movements, actions, places and memories that followed the Storegga slide, cosmological schemes, and the practical knowledge derived from them, would have both brought an understanding of the event and been remade in light of these new experiences of the sea and water. The fast-moving tidal wave would be most intensely experienced by those in the area, but is likely to have been communicated to others elsewhere and over time. In this way, the properties that the
tidal wave and subsequent flood displayed would continue to remake the place of water and the sea in social identities and cosmologies. It has been suggested that an understanding of the tsunami as the product of malevolent forces led to the abandonment of Dogger Island, through loss of faith in the occupation (Weninger et al. 2008).

The Storegga tidal wave was an exceptional event, but the properties revealed are likely to have been experienced before, albeit on a smaller scale. In a similar manner to observations made in previous chapters concerning wood and fire, the variable and changing characteristics of water may have been central to how it was perceived. Exceptional events such as floods, daily tidal movements, seasonal swellings of lakes and rivers, gradual changes in wetlands and coastlines, and the variety of ways water manifests in weather systems would have all been experienced differently via the characteristics and properties that came to the fore. Rather than a constant, concepts of water may have been bound up in this variable existence: change is likely to have been part of how different waters, including the sea, were understood.

6.3.1 Rhythms

Many of these changes embody temporal rhythms that would have linked the waters to everyday lives, seasons and generations. Time may have been marked by tidal rhythms and seasonal changes, rather than the movements of the sun, moon and stars (Warren 2000, 101). For those living on the coast, the regular changes and rhythms of the sea may have become part of the temporalities by which everyday activities were performed (T. Pollard 1996; Warren 2007, 89). Through this, patterns of mobility,
gathering, group dynamics and social identities may have become bound up with the rhythms of the sea.

T. Pollard (1996) has argued that activities focussed in the inter-tidal areas particularly would have become most intimately interwoven with the rhythms of tides. Low tides, for example, provide opportunities to collect shellfish and other foods. In moving to carry out these activities, people would have gathered together, left other tasks and become engaged with watery places, materials and things. Although the sea water is lower or absent during these activities, wet sand, salty air, damp shells, and shiny stalks of marine plant material would make a watery place where people, materials and the sea interacted. The effect of the sea on the materials and places in the inter-tidal zone may have revealed properties of the sea to coastal communities. Water-smoothed stones may have been understood to represent the deliberate working of stone by the water, with the smooth surface reflecting the fluid material.

Kelp would have been collected at low tide and may have been a component of hunter-gatherer diets and, when dried, cured and soaked, kelp could have been used to make rope, fishing lines and nets (Orme 1981, 3-5; MacLean 1993; Mithen 1999). The revitalisation of limp beds of kelp into tall forests by the sea water may have suggested life-giving properties that were observed and understood through the seemingly increased vitality of kelp when overwhelmed by water. Every spring, kelp annually shed their leaves, which are then deposited on the shore by the high tide and gradually decay. Winter storms also uproot large numbers of kelp plants, which are
left on the shore by the strong waves. When uncovered by the retreating sea, these deposits of dead plants begin to rot and a potent smell is released (Fuller 1999). As the tides ebb back and forth, the decaying material is reduced and may have been seen to be reclaimed by the sea, perhaps suggesting properties of cleansing and transformation. In these daily and seasonal cycles, kelp is seen to be given vitality by the sea, dead material is rejected by the sea, but ultimately contained and removed by the waves. These interactions between kelp, sea and people may have encouraged an understanding of the sea as connected to death and disease, but also holding a cleansing property and a transformative power that encourages its use as a receptacle for decaying materials. The sea can both cleanse and contain unstable materials.

The regular exposure of kelp and shellfish by low tides may have been thought to be an animate characteristic, with the sea offering food to people as part of a reciprocal relationship. These properties of the sea, as provider and giver of life, might also have been reaffirmed when seals or whales were deposited on the shore. Alongside the physical properties of the sea that were experienced as people moved within intertidal areas, such as cold and wet, it may be that life-giving and cleansing properties were understood through interactions with, and observations of, the sea and kelp.

6.3.2 Taking to the sea

Alongside daily and seasonal activities, movement and journeys by sea are also likely to have been closely related to its rhythms; tidal patterns, seasonal changes and movements of marine animals. Although no boats have been found dating to the period in Britain, the distribution of materials and evidence of deep-sea fishing
confirm that regular journeys by sea were a feature of life for at least some groups around 4000 BC. By considering the distribution of bloodstone from Rhum, Warren (2000) suggests that the material was moved by sea over distances of up to 50km and that marine passage was a routine part of Mesolithic lives. Traces of Mesolithic occupation on Orkney and the Outer Hebrides and evidence of movement amongst the Inner Hebrides, between the Channel Islands and the continent, to and from the Isles of Scilly, around the Irish Sea, and between the continent and Ferriter’s Cove, support the suggestion of regular short and long distance maritime movement (Hardy and Wickham-Jones 2002, 832; McCartan 2004; Garrow and Sturt 2011). The western seaways in particular seem to have continued in use into the earliest Neolithic, with evidence of contact between the Channel Islands and the continent (Patton 1995), continued occupation of the Orkney Islands and Outer Hebrides (Armit 2003) and seasonal visits to the Isles of Scilly (G. Robinson 2007). Movement and contact by sea, particularly along the Atlantic façade, has been a focus of prehistoric archaeology, particularly among those arguing that the migration of farmers brought about the transition to the Neolithic in Britain (e.g. Fleure 1915; Piggott 1954; Bowen 1972; Cunliffe 2001; Sheridan 2003; 2004; 2007; Callaghan and Scarre 2009).

Within the body of literature related to maritime travel, themes of gift-exchange, migration, power-relations and resource procurement are explored in relation to the sea and long distance contact (e.g. Helms 1988; Skeates 1993; Mannino and K.D. Thomas 2001; Erlandson and Fitzpatrick 2006). The practicalities of travelling over the sea have also featured in many discussions, with historic and ethnographic sources used to explore Mesolithic and Neolithic seafaring (e.g. Case 1969; Coates
2005; McGrail 2007; Peacock et al 2010). Debates about the form of prehistoric vessels, whether they were sail or paddle-powered and what their capabilities were, have dominated these studies. Callagahan and Scarre (2009) have used simulation programmes to determine the seasonality, time taken and feasibility of a range of journeys in vessels powered by sails or paddles. The analysis considers the nature of the maritime journeys between Brittany, Ireland and Britain, but with a focus on departure, destination and direct travel between the two points. As Garrow and Sturt (2011) highlight, an emphasis on time taken, and therefore undeviating journeys, means that sailors are assumed to have been ‘purposeful and optimally performing mariners’ (Garrow and Sturt 2011, 62). There is a danger of losing sense of the possible diversity of groups and their different patterns of movement if the archaeological record is used to create singular narratives of mobility.

This caution can be extended to discussions of why people might be moving across the sea. Boats may have allowed groups to fish in different areas and access a larger range of resources, but they also provided an important means of transport, facilitating visits to kin and the maintenance of contact with wider communities. The movement of bloodstone identified by Warren (2000) not only attests to an ability to travel by sea, but suggests social networks linked by exchange and the movement of people and materials. Rather than simply being a barrier, the sea can facilitate economic and social activities, creating networks, opportunities for gift-giving and chances for social contact. Warren (2000, 98) argues that these opportunities, available only to those involved in these journeys, would play a role in power
relationships amongst coastal communities, with the ability to travel to and from distant places and bring news, marking sailors out within a community.

6.3.3 Boats and the ‘lived experience of the sailor’ (Sturt 2006, 121)

Warren (2000) suggests that many of the journeys by sea in the late Mesolithic would have been in small boats that stayed close to the land. Experiments in the Mediterranean (Robb and Farr 2005; Farr 2006) show that small craft would also have been able to make journeys across open seas. However, the largest sea-going hide boat recorded was 18m long, suggesting that we should not assume that boats at this time were particularly small (Adney and Chapelle 1964, 175). This is particularly pertinent when considering the movement of large groups, animals and material culture from Europe. Alternatively Peacock et al (2010) have argued that log boats may have been used to cross large stretches of open water, citing their stability and larger capacity as suited to rougher waters. Examples from maritime and estuarine contexts in Ireland might support the suggestion of the use of this type of boat at sea (Forsythe and Gregory 2007).

In a similar manner to Peacock et al (2010), models for Mesolithic and Neolithic vessels have often been discussed at a functional level, neglecting the social context and cosmological knowledge that is central to the process of making a boat. This problem can also be seen in many ethnographic studies of traditional boats, where a focus on technological classificatory systems based on construction, handling, propulsion and other technical aspects exists (e.g. Hornell 1946; Greenhill 1966; McGrail 2001; Pohl 2007). Ransley (2011, 884), however, has suggested that boats
should be studied as material culture, rather than technology, with the social relations, local beliefs, motivations, innovations, and choices involved in boatbuilding discussed alongside questions of tool use and crew organization. The role of boats in the construction of social identity and the relationships between people, boats and water are further aspects that a material culture approach to boats can consider. Chris Tilley (1999), for instance, has shown how canoe-building on Wala, Malekula, Melanesia, involves the use of metaphors tied to identity and gender. A material approach to boats that considers materials, actions, cosmologies and social context may offer a holistic way to approach these objects, but is beyond the scope of this thesis.

The relationship between boats and water, and how water was perceived, can also be investigated through a more interpretive approach to boats and boat-building. In an analysis of the Bronze Age Dover boat, Mary Helms (2009) recognised that there may have been both practical and cosmological aspects that governed the use of yew and oak in Bronze Age boats, suggesting that properties such as an energising potency and protective ability, may have been drawn upon in crafting the vessels. This, in turn, reveals something of how the sea may have been understood, with the boat forming a barrier, keeping the interior safe from the dangerous and disorderly conditions of the water (Helms 2009).

The approach used by Helms is similar to the material approach I have used already within this thesis. I would suggest that the properties of yew and oak would have been known from previous experiences of both the trees and their timbers, and would
have been understood through cosmological knowledge about the world. In making and subsequently using a boat, these properties would have been experienced anew, reaffirming cosmological schemes and contributing to how the vessel itself was perceived. Ideas about the materials used, cosmological schemes and group identities would all be embodied in the boat and demonstrated through the properties it displayed. In previous chapters, I discussed the mutual engagement of person and material in processes of making and how these parts of a biography contribute to the way an object is understood. In this way a boat may not only embody the properties of materials or cosmological knowledge, but the process, people, materials and transformations that occur in its construction.

With regards to the specific focus of this thesis, Richards’ (2008) discussion of the spectacular canoes used on the Pacific Ocean provides a key example of the role of the sea in cosmologies. As part of voyaging practices, canoes are understood to be more than a means of transport, but become living ancestors through the processes of construction, transformation, and use. The vessel came to embody relationships, places, social identities and belief systems, incorporating both the ‘social and material constituents’ (Richards 2008, 212) of its origin. Once constructed the grand canoes of Polynesia were used to undertake voyages that reproduced the past and reconstructed social identities.

For Polynesian societies, the practice of voyaging involved not only a focus on the construction of a canoe but on travelling over water, in this case the Pacific Ocean. Transformation came not only through the production of a canoe but also at sea,
where everyday bodily experience of the world is altered. The distinctive smell of saltwater, sounds of the sea and movement of the body with the motion of the vessel are part of engagements with the materiality of the sea (Richards 2008, 216). Travelling on the sea calls for different skills, and causes people to move differently, than on land. Currents, tidal flows, large waves and wind patterns can all alter the sea and, in turn, the bodily experience and interaction with the water (Cobb and Ransley in press). Thus, the practice of voyaging then is concerned with both physical and social transformation. The physical experience of the sea and its properties of movement, power, smell, vastness, instability, transformative and, in the specific case of Polynesia, creation is intimately woven into cosmological schemes that understand crossing the sea to be a transformative journey involving the recreation of social identities and beliefs. Travelling across the ocean is not a metaphor for change, but a mechanism for change. This understanding of the sea as transformative is part of the specific social context of Polynesian cosmologies but is born from, and reaffirmed by, the physical experience of being at sea.

Alongside concepts of the ocean as transformative, Polynesian beliefs also understand the sea to be unstable, powerful and alive with spirits and monsters (Orbell 1985b; Barber 2003). This complex understanding of the sea reflects experiences of the changeable and multifaceted character of the sea and also the different experiences offered by the range of contexts in which people might interact with it. The experience of a fisherman on the shore and voyager on the open sea might both feature motion, sound and smell, but would also have involved properties unique to each place and practice.
Returning to the late Mesolithic in Britain, seafaring, whether part of practices of journeying or fishing, as part of daily and seasonal routines, would have involved the intimate interaction between people and the sea as they moved through, and over, the water, observing and experiencing its character. Alongside a focus on economic activities at sea and continued discussions about nautical technology, more nuanced studies of seafaring have incorporated experiential and social perspectives to explore identity, social relations, temporalities and the existence of long range contacts (e.g. Palsson 1994; Farr 2006; King 2007; Peacock et al 2010).

The experience of being at sea, or on any body of water, is different to being on land in terms of movement and action, and creates a changed sense of space and temporality. Travel over water, however, does not constitute one set of practices and techniques that are universal, but the use of equipment, knowledge and actions that are socially and historically situated. There is therefore no single physical experience of sailing, or canoeing, or fishing, or wading, or interacting with water, but a range of ways in which movement, practice and experience are altered. Changes in the material culture involved in seafaring would also offer different experiences: the use of a paddle, pole or sail alters the actions and bodily experience of the practice. Knowledge of seafaring would be contextually specific and developed through new interactions. Experiences of storms and changes in conditions, for example, would bring to the fore different properties adding to complex conceptualisations of the sea.
Garrow and Sturt (2011) discuss the differences between the character of the North Sea and the western seaways around 4000 BC, suggesting that although the latter were more predictable and less challenging than the former, currents, tidal streams and large waves from the Atlantic would still present difficulties to those navigating the waters. The different knowledge and skills needed to navigate these two areas of sea may have led to the development of two, or more, distinct maritime traditions and perhaps different understandings of the sea. Within these different traditions, contacts and connections between specific groups in different areas of Britain and Europe may have existed. Within multiple narratives of mobility and movement there is perhaps the possibility that multiple pathways, networks and processes of interaction were involved in the Mesolithic–Neolithic transition in Britain.

Whichever waters were sailed, the evidence for movement between Britain and Europe suggests that Mesolithic and Neolithic groups were skilled sailors; journeys may have involved hours when land was out of sight and required vessels to cross rough and unpredictable waters. Both McGrail (1987) and Warren (2000) highlight the interplay between observation and knowledge required when sailing (see also Pálsson 1994). A keen awareness of local conditions and the character of the sea, of its tides, swells, mists, smells, rhythms and currents, would have been vital for successful passage. Navigation at sea, or on land, is a practical skill that is centred on the experience of the world and practical knowledge that in turn is bound up with cosmological schemes.
The practice of seafaring then involves an acute awareness of the properties of the sea, experienced through knowledgeable interactions, and an ability to work with the observed character of the sea to achieve safe passage. The relationship between people, boats and the sea is not one of dominance over nature, but a reciprocal relationship between people and the sea based on observation of the waters, birds, fish, and weather, understood through knowledge and experience of properties that emerge in a range of interactions (Pálsson 1994).

In this way, familiarity with the sea and seafaring could be akin to the skills of wood-working or manipulation of fire that develop through lived experience. Knowledge and understanding of all these materials arises through practice and the intimate interactions and experience of the properties and characteristics that come to the fore during those activities. As with the production of a wooden object, or a specific type of fire, moving over water is the mutual engagement of people and water, involving action and transformation that results in skilled seafaring and recreates cosmological knowledge of the sea.

6.3.4 Rivers

Although experiences of being at sea would have been important in reaffirming cosmological schemes, those living away from the coast may have had limited experience of the sea and concepts of water may have been constituted differently. Many late Mesolithic and early Neolithic sites are close to rivers, lakes or wetlands and it may be that the waterways were significant features in the landscape (e.g. sites in the Thames Valley and along the River Nene, Lamdin-Whymark 2008; Whittle et
al 2011, 263). It has been argued that the importance of rivers and wetlands in the Neolithic has been ignored in landscape studies, with Tilley (1994), in particular, held up as culpable (Haughey 2007, 120). It is perhaps an exaggeration to say rivers have been ignored; rivers as a means of mobility and economic resource have been widely discussed, with the opportunity to reach good fishing spots and ease of travel cited as their key features (e.g. Scott 1951; Sherratt 1996; Warren 2005, Mills 2006; Noble 2006). There has, however, been a lack of engagement with the character of rivers and the experiences provided through interactions with their waters (although cf. Cobb 2008 for a discussion of rivers and experience and Kador 2007)).

Sherratt (1996) suggests that travel on rivers may have been particularly attractive as it allowed dangerous sea travel to be avoided. It is true that rivers tend to be less volatile than the open sea, however there may still have been danger involved in the use of rivers, both physically in more tempestuous waters and in ways related to cosmological understandings of the world and water. Defining the sea as dangerous, perhaps unpredictable and laden with risk, and rivers as safe, and manageable, creates a simplistic dichotomy that focuses only on one aspect of travel over these waters. There are both shared aspects and distinct properties of these different waters; for example, the use of different vessels to travel on the sea, rivers or wetlands would affect the bodily experience of motion and being on the water. Small hide boats have been suggested to be the main vessel used at sea, while log boats were perhaps more common on rivers and wetland systems (McGrail 1998, 53). The distinct physical experience in each of these different boats would affect understandings of water and of the vessels themselves.
Polynesian voyaging, as described by Richards (2008) and discussed above, is suggested to have been centred on transformative journeys into the unknown, with the belief that islands would rise from the ocean. On the open sea, different weather conditions affect whether a clear view of the surrounding waters and any land is offered. A journey along a river can also lead into unknown areas and may feature clear views of the surrounding banks. However, views can also be obscured by curves and bends in the path of the water. In highly wooded environments, riverside areas and the route ahead may have been further concealed and the surroundings may have changed rapidly (Haughey 2007). Interactions with rivers would provide an experience of movement and directionality in both the currents and flow of the water especially if a physical journey were undertaken along a river. The proscribed route of a river and a sense of leading into the unknown may have been a characteristic of rivers that did contribute a sense of intimate danger in a manner unlike journeys over a vast sea.

Both the source and end of a river would often extend beyond the place or moment of interaction, connecting to known and unknown people and places elsewhere and perhaps in different realms or times. In some societies, rivers are key markers in cosmological schemes, forming a directional axis that relates to everyday navigation and ceremonial practices (Nelson 1986; Pardon 1993). The movement and directionality of rivers lend themselves to this position as an axis within the world and perhaps between worlds. It may be that, in the same way that human action and movement created landscapes, rivers were understood to be materialisation of the
connections made through travel, action and interaction. These properties of movement, direction and connection to unknown and unseen places may have encouraged cosmological ideas that rivers were places that touched other realms or peoples. I have already discussed the belief found in many hunter-gatherer societies that the sea or rivers lead to the underworld or realm of the dead. The experience of water moving in currents and tides, to unknown places and times may have contributed to that particular cosmological role.

6.4 Deposition

The suggestion that the coastal shore was understood as a liminal space and used for similarly dangerous or liminal activities has also been applied to wetland environments, the riverbank and lakeside. The potency of these areas however is drawn from their position as places of action where interactions between people and the water were most immediate and opportunities to connect to other groups and areas were more tangible. Instances of the intentional deposition of material culture, human remains and animal bones in water are found throughout Mesolithic Europe (Kirsten 1994; Bradley 1998; Strassburg 2000). The interactions involved in making these deposits may have drawn on different aspects of the complex role of water in cosmological schemes. Evidence of material deposited in water can offer a way to consider these interactions.

The deposition of axes on the shore, riverbanks and in water has been identified as a widespread phenomenon seen throughout the Mesolithic and Neolithic (e.g. Wymer 1977; Jacobi 1987; Field 1989; Woodman et al 1999; Chatterton 2006, Lamdin-
Whymark 2008). Rankine (1956) and Care (1979) both note that a large proportion of
the Mesolithic axes that were deposited in the River Thames had never been used,
and this may be a reflection of a practice in which the processes of making and
depositing the object were the focus. The actions, characteristics and behaviour of
both stone and person may have been understood to have contributed to the shaping
of an axe, with an object emerging from the relationships and interactions involved in
procuring and working the stone. Khanty hunters carve trees after killing a bear to
inform those in the upper world about the event and that fathers carve small idols left
at spirit houses to communicate the birth of a child (Jordan 2003a). In that context,
trees were thought to be connected to the upper world. It may be that the deposition
of a worked axe in water was understood, in part, as a communication and reflects a
belief that water connected to other places and perhaps other people, times or realms.

Human remains are often recovered from rivers in Britain, many remain undated, but
in some instances a contextual date can be suggested. A partial human cranium from
a palaeo-channel of the River Thames at Wallbrook is undated but stratigraphically
may date to the late Mesolithic ref needed. Among the material that has been dated
are remains from the late Mesolithic and earliest Neolithic, for example a human
skull from the River Thames itself was found to date to 3950 – 3350 cal BC (Bradley
and Gordon 1988, 508; Schulting and Bradley in press). The shaft of a human femur
found in an assemblage of animal bones within a palaeo-channel at Staythorpe in the
Trent Valley has been dated to 5735 – 5630 cal BC and a similar deposit at Billingham
in the Lower Tees Valley is also thought to date to the Mesolithic (Chatterton 2006;
Davies *et al* 2001). A burial by the river at Tillbury also dates to this period (Schulting 2013).

The concept of water as a place to deposit unstable or potent materials is seen within many societies. Among groups in New Guinea, menstrual blood is considered to embody a powerful entity and must be deposited into a river to protect both the woman concerned and the social group (A. Strathern 1996, 75). The action of depositing this material into a river would be one through which the substance would disperse, dissolve and disappear, seemingly contained and broken down by the water. A potent and dangerous material is visibly destroyed by water within this experience. This visual confirmation of destruction may have been experienced with materials or objects that dissolved rapidly when dropped into water. The disappearance of materials not broken down immediately may have been understood as their removal by the water as they were carried away by currents, or their containment and concealment as they sank to be buried in sediment.

Intentional deposits of animal bone are also often found at Mesolithic sites. At Star Carr, Yorkshire, an abundance of animal bones, antlers and broken barbed points were found and a similar wealth of animal remains and antlers were discovered at Thatcham, Berkshire (Wymer 1962; Legge and Rowley-Conwy 1988; Conneller 2004). Conneller and Schadla-Hall (2003) have shown that the amount of material deposited at Star Carr is not representative of other sites around the Vale of Pickering but of a specific place where objects, particularly those made from animal parts, were deposited. Objects made from animal bodies have been suggested to have blurred
human and animal identities when worn or used, altering the way the person was conceived (Conneller 2004). This understanding may have occurred within a belief system in which animals possess a soul and are thought to have social-relations amongst themselves (Viveiros de Castro 1998; Ingold 2000; Conneller 2011). The objects deposited at Star Carr may have mediated the transformation between human and animal bodies and identities and, as a result, may have been potent as transformative instruments (Conneller 2004; 2011).

The specific location of the site at the lake edge may have reflected these transformative objects and processes. The wetland location would have been one in which people necessarily altered their movements and where the world was experienced differently. Interactions with an environment partly of a watery world and partly of the land, with properties of both, may have suggested its suitability for activities that involved transformation and that blurred boundaries. As people engaged with the wetlands in carrying out these activities and were transformed by its properties, a sense of place with history and traditions of practice would develop. What is more these interactions with the lakeside environment would draw on practical knowledge from cosmological schemes and enable these to be reaffirmed or recreated.

As discussed above, water may have been considered an appropriate vessel in which to safely contain the potent animal objects found at Star Carr. While this might share some features with the deposition of human remains in water in terms of removing materials from the lived world, a more complex understanding of the relationship
between specific materials or objects and water is likely to have existed. The deposition of material into still waters, such as lakes, can be concerned with protection and peace for the remains, as discussed above. Unlike the sea or rivers, lake waters may have been understood to be sedentary and place-bound. Rather than dispersed and transported elsewhere material deposited into a lake would be safe from human disturbance and contained but in a known location to which people could return. Rather than sending objects away to a distant underworld, the pieces deposited at Star Carr were successively placed in an area where they would not be disturbed but were kept together. Alongside the need to contain potent objects, the deposition into a protective watery environment may have been bound up with ideas of creation, renewal and regeneration. Wetlands are rich environments, featuring fish, waterfowl and a diverse range of plants. Animals are frequently drawn to these areas and may have visited the lakeside. The vibrancy of the environment may have contributed to ideas of the lake as a source of creation and vitality. By depositing parts of animal bodies in the water their souls may have been released to be renewed.

6.5 Perceptions of water

The prevalence of water in the world and its necessity in everyday lives may have meant it played an equally prominent and fundamental role in cosmological understandings of the world. Vital for life and a source of food, water would have been intimately linked with human and animal bodies and may have been considered part of creation. The near constant motion of water may have suggested it held an energy or living force of its own, perhaps understood as ancestral or spiritual. In
contrast, the danger of water and its ability to take life may have been malevolent and unstable properties that contributed to a belief in a living force.

Change and transformation may also have been central to the way that water was perceived but understood and experienced differently in a range of interactions. An altered bodily experience of the world when at sea would not correlate to the experience of moving along a river, sinking into wet sand on the shore, wading through wetlands, or standing beneath a waterfall. In a similar manner objects and materials deposited into water may have behaved in a way that reflected particularities of the context however, there may have also been shared concepts understood through these actions such as the ability to break down bodies and materials.

The deposition of human remains in rivers may have been focused on the directional movement of water alongside the ability to disperse the material. In contrast the potent objects deposited at Star Carr might have been concerned with depth and burial in water and the capacity of water to contain and conceal. The dynamic transformative environment in which the activities at Star Carr took place would have featured properties of land and water that came to the fore as people moved through the area. The changeable nature of lakeside, or shoreline, areas is discussed further in the next chapter but it is noted here that watery properties can extend beyond the edges of traditional landscape boundaries where the water and land meet.
By facilitating movement, the sea and rivers allowed for contact with groups in other places and provided access to resources. Although there were risks involved in sea crossings, the description of the sea as a barrier to movement, as suggested by Davison et al (2006), denies the archaeological evidence for maritime movement and contact around the British Isles and implies that people in the past would always choose safety. Cummings (2013, following Richards 2013) has argued that risky journeys can be seen as an opportunity to gain prestige or status within society and that voyaging can be a central part of social identities. These ideas are drawn from the work of Richards (2008), discussed above, which highlighted the relationship between Polynesian voyaging, cosmology and identity. Although much of Richards’ (2008) argument is specific to the Polynesian context, the idea that journeys could be undertaken as part of practices bound up with the re-creation of myth, tradition, history and identity should not be discounted in relation to communities inhabiting the islands of Britain around 4000 BC.

Travel over water requires skilled and knowledgeable observation. As Sturt (2006) has demonstrated, local knowledge can be crucial to successful navigation: and it may be that the practice of travelling over water was bound up with personal and group identities and a relationship with specific places. Cobb and Ransley (in press) have convincingly shown that the world is not divided into a landscape and seascape, bordered by a liminal zone, but that places, areas, and identities are defined and made through action and movement, using specific knowledge and material culture. In these places, the specific temporalities and cycles of change materialised by the tides,
swells and floods that occur daily and seasonally may have been incorporated into
cosmologies and become part of the rhythms of human lives.

The variety of forms of water within the world lends it a versatility that is shared with
both wood and fire. The changeable nature of water and state of flux suggests an
instability similar to the flames of a fire. Water and fire can be transformed, and bring
about transformations, when combined with other materials and bodies. The colour,
taste and opacity of water can change when materials are added to water, but once
dissolved, or still, their presence can often not be detected. This ability to contain,
control or break down materials may have been central to an understanding of water
as a powerful and suitable forum for the deceased and for potent materials.
Transformations of water may not have involved a physical change and instead a
history of practice can have instilled certain properties or characteristics. Two pots
filled with water might be chemically the same, but, if one has been transformed into
sacred water, it would be perceived and used in different ways.

The pervasive role of water in everyday life allows it to unite disparate places, people
and spheres of action. The importance of water is likely to have been, at least partly,
linked to its necessity for the living however, its ability to transform, to facilitate
communication and contact, and to fragment and disperse materials and bodies may
have given water a central role in the lives of people around 4000 BC. Concepts of
water would have been bound up in the range of interactions between people and
water, and the specific properties that emerged and were experienced in different
contexts. With each interaction ideas about water and its relationships within
cosmological schemes would be renegotiated in a way that renewed existing beliefs but also allowed for change. As I have suggested for both wood and fire it may be that the flexibility and prevalence of water encouraged a similarly complex, and perhaps fundamental position within cosmologies.
Chapter 7: Bodies, Wood, Fire and Water: Materialising Cosmologies in Cremation Practices

This chapter marks a departure from the structure of this thesis but serves as a bridge between the three materials under consideration. Materials do not exist in isolation within the world and are brought into contact within activities and practices. The roles of fire, wood and water in cremation ceremonies form the focus of this chapter. Their use in these practices brings to the fore specific properties in these key materials. Each contributes to part of a broader process whereby the transformation of the person is comprehended through the materialisation of the body. Within cremation practices connections are made between materials, bodies, spirits and other realms that reflect the role of elemental materials in cosmological schemes and understandings of the relationship between people and the world.

The relationship between wood, fire and water in mortuary practices is first explored through a consideration of Balinese cremation practices as observed by Jane Downes (1999). The particular focus on materials and material culture in this account recommend its study here. Cremated remains from Hermitage, Co. Limerick, and from the earliest phase at Haddenham, Cambridgeshire provide hints about the cremation practices in the Mesolithic and earliest Neolithic. The burnt remains themselves and their place of deposition can also offer insight into how the process of transformation, and materials involved, were understood. The narratives suggested
below for these two sites draw on the ethnographic material covered in previous chapters alongside detail of their context and taphonomic indicators on the cremated bone.

7.1. Fiery Transformations

As discussed in chapter five, material interactions with, and the effects of, smoke and fire on the living can encompass social relations and both personal and group identities. They can affect actions, movements and practices through altered bodily experiences of the world. Both are also frequently used to purify and transform the body in mortuary practices (Morris 1992, 10; Strassburg 2000, 241; Oestigaard 2011). In many belief systems, the corpse and soul of the deceased are thought to be polluted by death and both must be cleansed to successfully complete their journey. Failure to do this could result in their continued existence in the realm of the living (e.g. Barth 1993). Among groups in western Siberia smoke is often used to purify the dead while fire ‘cooks’ the body to cleanse the deceased before the journey to the ancestors (Kroll-Lerner 2007, 193). The burning of objects associated with the deceased often reflects the belief that materials and objects are polluted through contact or connections with the dead (Manzi and Spikins 2008).

Many of these ideas are reflected in the Balinese Hindu cremation ceremony observed and recorded by Jane Downes (1999) however, to generalise would obscure the contextual detail of the specific cosmological schemes within which practices were enacted. Balinese Hindu cosmology is centred on horizontal and vertical axes that guide the orientation and categorisation of the world. These axes are materialised in
the landscape, with the main north-south axis running from the mountains (kaja) to the sea (kelod) (Howe 2005, 9). This axis is also a scale or ladder of ritual purity, from the gods to demons. A vertical axis divides the universe into three realms: the heavens (amongst the mountains), the lived world and the underworld (associated with the sea).

As acknowledged in the introduction to this thesis this cosmological scheme is described by Downes (1999) as a practical knowledge that is expressed and embodied in everyday life, through a consideration of orientation and classificatory schemes. Fire is associated with a directional point, specific places in the landscape, deities, colours and parts of the body. Fire is considered an especially powerful material, able to act as a transformatory agent and also to purify and neutralise dangerous or polluted material. Witches, for example, are said to emit fireballs, but can also be destroyed by fire (Howe 2005, 48). Downes (1999) suggests that the visibility of fire and its volatile nature may have contributed to this understanding, with fires in different contexts being perceived to hold different characteristics.

Cremation ceremonies, and mortuary practices more broadly, within Balinese Hindu society involve a conscious concern with the journey of the soul of the deceased to the place of their ancestral spirits. The soul of the dead must be purified and until this is completed the soul is pirata: unclean and dangerous (Barth 1993, 196). The cremation fire purifies the soul and allows it to travel north to the household dwelling. At this stage the deceased becomes a pitara: a purified soul that can be an object of veneration inside the household dwelling. Through this process the living community
is also purified and the *pirata* is no longer a threat to the family. After a number of memorial practices the soul becomes a divine ancestor and merges with the ancestors of the household temple (Barth 1993, 196).

Earth also features in cremation and mortuary practices. Like fire it is associated with particular places, beings and characteristics. The dead are often buried prior to cremation however, this contact with the earth is believed to further pollute the deceased and efforts are made to limit the length of burial (Downes 1999). The concept of earth as polluting perhaps reflects the preservation of the body through temporary burial. The requirement for fragmentation of the body to release the soul is central to Balinese Hindu cremation practices. By containing and trapping the soul within the body earth not only demonstrates a power to slow processes of decay but pollutes the body by restricting and trapping the soul. Observation of these processes, or rather the arrest of processes, may have contributed to ideas that the body of the deceased is polluted by contact with earth.

The cremation pyre is constructed on a small mound with structures built to raise the corpse and allow air to circulate. Fuel is added to the fire in the form of effigies and offerings, and knowledge of fire technology is employed to complete a swift cremation. The body is tended and manipulated to achieve rapid fragmentation and, importantly, to allow the soul to escape (Downes 1999, 22). These actions involve an understanding of fire as both a transformative and destructive force, and are a practical expression of shared cosmological schemes amongst the community.
Through these practices this shared knowledge and cosmology is materialised in the lived world and re-affirmed.

In addition to fire, the unclean soul is purified through the use of holy water which is poured on the body during the cremation and used to quench the pyre before the fragmented bones are collected (Downes 1999, 23). The soul is purified by the process of cremation and the combination of fire and holy water. The fragmented bones and offerings from the ceremony are however, still considered to be polluted and are deposited into the sea (or a river that will carry the material to the sea). In contrast to the holy water, which is used to cleanse, the sea is associated with the underworld and demons, a suitable place for polluted and dangerous materials (Downes 1999). The vessels used to transport the holy water and cremated bone are smashed at specific stages of the proceedings in different locations around the site.

Some vessels, the structures built for the ceremony and the containers used to transport the corpse are burnt in the same pyre that transforms the body. Their inclusion in the cremation pyre removes them from the living world through fragmentation yet the fragmented material remains continue to be considered polluted and dangerous after the fire has burnt out. Alongside there burnt remains the material residues of cremation ceremonies unburnt pot sherds of various sizes in different areas of the site, the mound on which the pyre was built, and post-holes from various structures used in the ceremony (Downes 1999, 24).
Soon after the fragmented bones have been deposited in the sea, the larger sherds of pottery, perhaps those that have not been sufficient destroyed, and burnt remains of structures are collected and placed in an open pit (Downes 1999, 24). This is perhaps considered a form of burial, however as mentioned above, contact with the earth is thought to pollute the corpse and any extended period of burial is avoided. While the soul of the deceased is purified through the fire, their body, pot sherds and structural materials involved in the cremation ceremony remain contaminated. Instead these substances are fragmented, burnt and deposited, in practices that perhaps aimed to destroy and contain, rather than cleanse. That the pit was left open perhaps suggests that while the polluted materials were contained away from the living they remained open to processes of decay and destruction that operated at a slower tempo than practices in the cremation ceremony.

At once the cremation fire is destroying polluted materials whilst purifying the soul; different characteristics of fire are active within the same pyre, interacting in different ways with the materials present and bringing about different transformations. As discussed earlier, I do not advocate direct analogy; however this study of Balinese Hindu cremation demonstrates that burnt or transformed materials may not have been understood or treated in the same way as the materials they resulted from, or as each other. Rather than searching for a single understanding of fire, we should be aware that the ways in which fire interacts with different materials may have led to the belief that multiple processes were occurring.
The different material interactions occurring within a cremation pyre are understood through cosmologies that connected fire to other parts of the world and universe. McKinley (1989) suggests that, through consideration of pyro-technology, we can elucidate the level of practical knowledge used to build and maintain a pyre. This knowledge is not separate to, nor in addition to, beliefs about fire, but part of the same knowledge that draws on cosmological schemes to understand the interactions between people and materials. In relation to cremation pyres, Downes (1999, 27) suggests that the organisation and treatment of burnt remains can help us to access the practical knowledge that was expressed in past actions. Drawing on these insights the following two sections consider cremated remains from the Mesolithic and Neolithic in terms of the processes of cremation and the context of their deposition.

7.2 By the River: Hermitage, Co. Limerick

Although Mesolithic cremations are rarely found in Britain, they are not unknown in Europe where they form part of a range of complex mortuary practices (e.g. southern Belgium, Cauwe 2001; Vedbaek, Denmark, Petersen and Meiklejohn 2003; Vlassac, Serbia, Borić et al 2009). Their absence in Britain is part of a wider paucity of burial evidence for the Mesolithic period and is likely to be a function of poor preservation and low recognition rather than a genuine pattern (but see Woolverton 2015 for details of a recent discovery in Langford, Essex). In Ireland, at Hermitage, Co. Limerick, three pits containing cremated remains were found on the river bank of the Shannon (Collins and Coyne 2003). Bone from two of the cremations was dated to the 8th millennium BC (A: 7530-7320 cal BC, B: 7090-7030 cal BC) while the third was dated to the mid-7th millennium BC (C: 6610-6370 cal BC; Collins and Coyne 2006).
A small post hole in the base of the earliest pit (A) was thought to have held a post that acted as a marker for the burial (Fig. 7.1; Collins and Coyne 2003, 25). Two burnt microliths and a burnt stone axe (Fig. 7.2) were recovered from this pit; the axe appeared to have been placed vertically against this post and several further axes were recovered from the river nearby.

Figure 7.1 Plan and section of pit A at Hermitage, Co Limerick. (after Collins and Coyne 2003)

The axe placed in the larger pit has been more broadly linked with traditions surrounding stone and deposition, particularly in wet places (Chatterton 2006, 111).
Although ideas concerning the significance of axes and their deposition in water are useful in considering this axe, the material traces of its possible involvement in the actions and transformations of a cremation event offer a way of thinking about a more detailed interpretation of this deposit. The surface texture and colour of the axe were altered in the cremation fire, suggesting that the object itself underwent a transformation. The inclusion of the axe in the pyre may have been concerned with its relationship to the deceased, its use in mortuary practices, or perhaps in creating the post inserted into the pit. It was perhaps the material changes suggesting transformation, and the specific biography of this axe understood within broader cosmological schemes that resulted in it being placed alongside the post and cremated remains.

*Figure 7.2 Burnt axe recovered from pit A at Hermitage. (Collins and Coyne 2003)*
Cremation A was of an adult male whose corpse had been cremated at temperatures above 600 °C with the majority of the remains (1979g) thought to have been collected for burial. Only 179g of burnt remains were gathered for deposition in feature B, representing approximately 7 – 18% of the estimated weight of an adult cremation (c. 1,000-2,400g, after McKinley 1993, 285). The remains showed signs of being cremated in an environment lacking in oxygen, causing the bone to turn a distinctive colour (Collins and Coyne 2003; see also Shipman et al 1984). The third cremation (C) featured less cremated bone than A or B and the fragments recovered could not be securely identified as human (Collins and Coyne 2003). As suggested for the unidentified cremation at Haddenham, the distinction between human and animal may not have existed for communities in the Mesolithic and a known animal could have been treated in death as a person.

The deposition of only a portion of the cremated remains is not unusual for the Mesolithic or Neolithic period. It may be that the remaining bone was kept by the living, or that the majority of the cremated remains were deposited elsewhere, perhaps in this case the River Shannon. In many Hindu traditions, cremations take place at the water’s edge, with the burnt remains swept into the water (Kaliff 2007). The focus of this practice is on fragmentation of the body and dispersal in water completes. The different amounts of cremated material included in each pit could suggest changing practices or beliefs surrounding the appropriate treatment of fragmented remains.
Other variations exist between the three features including the method of cremation and the nature of the pit dug for the remains. The inclusion of a post within the pit of burial A and the presence of most, if not all, of the cremated remains, might suggest that the specific place of burial was of importance. The post, as a material focus, may have represented the transformed body of the deceased. As processes of decay took place they may have been understood as the ongoing transformation of the dead. As a marker of burial, human remains and perhaps a materialisation of on-going change, the post may have been a focus for further practices, or may have marked a dangerous or polluted area. Despite the smaller amount of cremated material in features B and C, the remains were deposited into much larger pit features than cremation A, perhaps suggesting an emphasis on the immediate actions of digging pits rather than the careful collection of human remains and creation of a material marker. These differences may not relate to a general pattern of changing practices, but may involve actions and process that reflect the deceased and the contexts of their life and death.

All three burials are, however, situated on a riverbank, suggesting that both burial within the earth and proximity to water were important aspects of these practices. Water is often a highly potent material amongst hunter-gatherer societies and, as previously mentioned, in many cosmologies both the dead and water are connected to the underworld (e.g. Hicks 1988, 814-815; Zvelebil 1993, 57). In western Siberia, the Ostyak of Salekhard place their dead in canoes on the river (or ice) so that they will travel to the underworld (van Gennep 1960, 167). The connection between water, particularly rivers, and other worlds has been suggested to be almost universal within shamanic cosmologies (Blacker 1986, 83–4; Helskog 1999, 77; Roe 1982, 136; Bahn
1978; Reynolds 2010). Within these societies, the journey of the body, or remains of the deceased, downriver is vital to remove the materials from the lived world and complete the journey of the soul. The movement of water in rivers or at sea may have been a key property that contributed to ideas of water as a gateway to the underworld.

At Hermitage, cremated bone, as a materialisation of both fire and the dead, may have been a particularly charged material. As already noted, the symbolic aspect of engaging with the earth has been recognised (C. Fowler 2004a, 91) and both burial in earth and deposition in water may have been part of practices that sought to complete the transition of the dead and remove dangerous materials from the lived world. The cremations on the banks of the River Shannon suggest that the burning of a body in a cremation pyre may have been only one part of the transformations and transitions which the dead passed through.

7.3 Among the Trees: Haddenham, Cambridgeshire

Beneath the long barrow at Haddenham, Cambridgeshire the earliest activity at the site included three large posts made of split oak tree trunks and a series of free standing posts, also oak, forming a façade perpendicular to these (Fig. 7.3). It is thought that the three large posts were erected first, with the easternmost timber later incorporated into the façade (Evans and Hodder 2006, 101; Healy et al. 2011, 288). The excavators have suggested that the posts and façade were built in relation to the entranceway of the later timber mortuary chamber as either a screen or augmentation
(Hodder and Evans 2006, 192). This explanation however makes a number of assumptions; that a design for further architectural features was in the minds of those who first erected the posts; that the raising of posts was not understood as a distinct constructional event; and that engagements with the posts anticipated further architecture. They are considered a component of a larger project rather than understood in their own right as the focus of practices. The timber posts however, were built before the mortuary chamber and were free-standing for a period before later constructions.

Reynolds (2010, 126) has suggested that the façade may have been erected to create a visual focus by surrounding an important space. Interaction with the posts may have involved modification through carving or decoration in ways that may have echoed interactions with trees. However, Morgan (2006, 116) has stated that if there were any traces of woodworking on the surface of the posts they have been lost to decay. It can however, be suggested that the bark and sapwood had been removed, and that the posts had been trimmed prior to use (Morgan 2006; Reynolds 2010, 127). The procurement of the timber and these preparatory activities would have involved intimate engagements with the tree and wood. Textures, colours and smells would have changed as people interacted with and revealed different parts of the body of the tree.

Although we cannot say with confidence that carving or decoration occurred we know that timbers were formed into posts and some woodworking did occur. Reynolds (2010, 127) has suggested that these actions imbued the posts with animacy
and agency in a totemic reading of the site. I would argue however, that the trees, and their timber, may have already been considered animate. To suggest that agency was added to the posts denies the relational quality of material properties that will have influenced engagements with the tree, timber and posts, and guided the ways in which they were understood. It is in this way that materials have effects.

Two cremation spreads (F.710 and F.711) were found close to the façade sealed beneath bank deposits. A complete, slightly carinated bowl with fluting inside the rim was found close to a posthole of the façade (Evans and Hodder 2006, 101; Knight 2006). Cremation deposit F.710 was found in a discrete area within a shallow linear feature which was otherwise filled with a mixture of soils and ‘chips’ of oak charcoal, while F.711 was found northeast of this feature within a shallow pit (Evans and Hodder 2006, 97). The oak charcoal was identified as being from several different trees that had grown in dense woodland and were thought to be related to wood-working activities that utilised fire (R. Darrah cited in Evans and Hodder 2006, 97). It is tempting to suggest that they relate to activities involved in shaping and erecting the large posts or façade.
Figure 7.3. Plan of wooden posts that form the earliest phases of activity at Haddenham, Cambridgeshire, including the three large posts made of split oak trunks, the façade and two cremation deposits. (after Reynolds 2010, 125; Evans and Hodder 2006, 100)

The cremated bone within both deposits was fragmentary and representative of only a small part of an individual, perhaps a token amount of material. The bone in F.710 has been identified as human but F.711 could not be securely identified as animal or human. In a society with an animistic worldview a known animal may be considered a person and might be treated in the same way as a human person in death. Whether human or animal the cremated remains can provide information about the practices
involved. N. Dodwell (cited in Evans and Hodder 2006, 97), examined the remains and commented on the variation in colour of the bones: white and blue/black. The temperature of a cremation, duration of the process, the state of the bone immediately prior to cremation, the amount of oxygen present and the presence of other organic materials in the cremation context can all affect the colour of the cremated bone (Ubelaker 2009; Walker et al 2011). The fuel used in the pyre, the structure of the pyre, the amount of wind and rain, and the presence of surrounding materials are all factors that affect these variables.

At lower temperatures bone changes from a pale tan to reddish-brown colour and becomes gradually darker until around 300ºC when there is a shift in colour towards a dark blue-black. Bones burned in an environment with a large amount of oxygen become pale blue-grey or white at around 600ºC, as do bones buried and burnt within top soil. However, bones buried and cremated in soil other than top soil develop a purple colour if the temperature reaches c. 800ºC (Shipman et al 1984). This pattern of colour changes is not absolute and the range of factors mentioned above can have an effect including the state of the bone at the time of cremation. Whether bone is fleshed, defleshed but still fresh (‘green’), or defleshed and dry when burnt can also influence the colour of the resulting material.

Buikstra and Swegle (1989) have noted that dry bone did not progress beyond a tan colour as the temperature increased above 300ºC. Fleshed bone began to blacken where exposed, while defleshed green bone blackened completely. Both became white or pale blue-grey at approximately 600ºC. The colours observed on the
cremated bone in F.710 and F.711 at Haddenham (white and blue/black) suggests that some bone was cremated in sufficient oxygen and at a high enough temperature to produce white remains. The blue/black material however, may represent bone that was cremated at a lower temperature, perhaps in an environment with insufficient oxygen. If the bone all results from one cremation it may be that the pyre construction did not allow an even flow of oxygen, meaning that temperatures in some areas were higher than others.

The cremation of two bodies on pyres that reached variable temperatures and resulted in distinct colours and properties in the remains produced may have been understood as a failed, or incomplete, transformation. It may have been thought that the soul(s) of the deceased were unable to leave the corpse, or, perhaps, the realm of the living. It is also possible that the level of cremation that occurred was purposeful. Strassburg (2000, 229-231) in his reinterpretation of the Scandinavian Mesolithic suggests that some of the deceased were deliberately prevented from completing the journey to the underworld. Souls thought to be dangerous, due to aspects of their life or the manner of their death, were buried in such a way that they could neither leave the lived world, nor freely wander within it (Strassburg 2000). What Dodwell (cited in Evans and Hodder 2006, 97) described as an inefficient cremation may have been a deliberate practice executed by those with a skilled knowledge of the relationship between fire and bodies. Careful construction of the pyre or manipulation of the cremation fire may have allowed fragmentation of the corpse whilst not achieving a full transformation, preventing the person completing a journey or transition.
In previous chapters I have discussed the ways in which trees, timbers and posts may have been perceived and suggested that large oak posts such as those at Haddenham may have been understood in relation to the strength and endurance of oak trees. Morgan (2006) has suggested that the posts at Haddenham were stripped of bark and sapwood. The exposure of heartwood reveals the older, stronger timber and it may be that the deposition at Haddenham was also concerned with the strength and maturity of the oak posts. The contextual association of oak charcoal chips and a spread of cremated remains (F.710) could suggest that the deposit was made at the same time the posts were erected or when processes of modification were taking place. The exposure of heartwood may have been part of the practices in which the remains were deposited as people called on the strength of the tree. The size of the three large split-trunk posts, approximately 1.1m x 0.7m x 0.85m in depth (Evans and Hodder 2006, 101) suggests that the trees felled were reasonably mature emphasising longevity and perhaps meaning they were understood to hold connections to past generations. More specifically, the wooden posts would have embodied the actions, places and people that created them and so offered a material connection to social groups involved at Haddenham.

Trees are often understood as beings that connect to different realms, in part due to their vertical reach and buried roots in light of ideas about the sky and soil as upper- and lower-worlds. The posts at Haddenham may have been thought to be akin to trees in this way, buried in the ground and raised vertically. Such a role in cosmological schemes could suggest that Haddenham was both a place of transformation and one that communicated between realms. The deposition of cremated remains may have
removed them from the lived world and anchored the deceased in-between worlds. Whether an accidental failure or deliberate practice, the remains deposited during this first phase of activity may have been considered volatile and dangerous. In placing a small amount of cremated material at Haddenham people may have sought to isolate the dead from the living world. The properties of strength and continuity, and connections to the past and other realms may have meant that the oak posts were an appropriate forum for the deposition of these remains.

These practices occurred in an area that had in itself been transformed. The actions and movements that formed the earliest activities at Haddenham may have been part of practices that sought to reaffirm group identity through shared understandings of trees, timber and shared ideas of renewal of woodlands. The raising of posts may have been understood in a similar way to regrowth of cleared woodland and perhaps created an area in which trees, the woodlands, spirits and ancestors were reborn. Reynolds (2010) has commented that the appearance of a façade might be similar to encountering a woodland. From this perspective an alternative interpretation of the remains involving a return to Dodwell’s idea (cited in Evans and Hodder 2006, 97) that an accidental inefficient cremation had occurred can also be considered. It is likely that the distinctive remains would be understood to be the result of a different kind of transformation as they were gathered from the ashes. The material may still have been considered particularly volatile and dangerous but the incomplete journey of the deceased may have been a cause for concern rather than desired outcome. The deposition of a small amount of the cremated remains in the correct context may have been to ensure that transformations or transitions were completed and that the dead
were reborn. A place transformed through practices that brought about the rebirth of woodlands and trees, and associated spirits, ancestors and beings, as wooden posts may have been the correct context for renewal and transformation of the dead.
Chapter 8: Ascott-under-Wychwood, Places and the Past.

The relationship between landscape, place and materials has been evident in the previous three chapters in terms of source, movement, visibility, action and people. This is pursued further within this chapter through detailed examination of the Mesolithic and early Neolithic pre-barrow activity at Ascott-under-Wychwood, Oxfordshire. In particular the accumulation of materials is considered in relation to the use of materials in depositional and middening practices that resulted in the construction of places in the landscape. Deliberate juxtaposition of examples of a material displaying different properties, e.g. burnt and unburnt material, and an emphasis on processes of decay is argued to be visible within the Neolithic deposits and part of processes that seek to renegotiate the role of key materials in the world and cosmologies.

8.1 Ascott-under-Wychwood … a biography

Having been subject to little antiquarian investigation the long barrow at Ascott-under-Wychwood was first excavated between 1965 -1969 in advance of a road-widening scheme. The long barrow is orientated east-west and lies within the Oxfordshire Cotswolds adjacent to a brook that eventually joins the Upper Thames (Whittle et al 2007). The final monument (Fig. 8.1) was trapezoidal, 46m long, with the broader end to the east defined by two horns and a small forecourt. The barrow was built in two phases with the final mound being surrounded by faced stone walling. Within the initial barrow were two opposed pairs of stone cists, each with a short passage. In total the cists and passages contained the remains of 21 people.
including articulated and semi-articulated skeletons, and cremations (Bayliss et al 2007). Beneath the barrow a turf line overlay a buried soil horizon which revealed early Neolithic activity including two small timber structures, midden material, pottery, flint, animal bones and stone querns (McFadyen et al 2006).

Figure 8.1 Overall plan of Ascott-under-Wychwood long barrow (Benson and Whittle 2007, Fig. 1.6)
8.1.1 A (more) precise radiocarbon chronology

In recent years chronological models have become increasingly sophisticated with the application of Bayesian statistics. The models produced from the process combine both archaeological interpretation and scientific data (see Bayliss et al 2007b for details of this technique). Work by Whittle et al (2007) on five long barrows and long cairns in southern Britain has produced models for the construction, use and closure of the five selected monuments. These more precise models have allowed a more detailed consideration of the tempo of practices at these sites. The models suggested for Ascott-under-Wychwood are presented and discussed below.

The Bayesian models by Whittle et al (2007; 2011) suggest that although many long barrow monuments did not begin before the 38th century cal BC some examples are shown to have been earlier (e.g. West Cotton and Burn Ground: Whittle et al 2011; Coldrum: Wysocki et al 2013) More specifically it is unlikely they appeared before 3750 cal BC (87.7% probable, Whittle et al 2007, 126). At Ascott-under-Wychwood the long barrow or cairn overlies earlier activity meaning that the monument is only one part of a deeper history of place. Detail of practices and activities involving material interactions can be considered in relation to these refined chronologies to suggest the temporality of changing practices in the early Neolithic (e.g. Whittle et al 2007; Reynolds 2010; Griffiths 2011).
8.1.2 Sequences, timetables, models and interpretations

Bayesian analysis of a range of radiocarbon dates from the site has produced a number of chronological models for activities at Ascott-under-Wychwood. The different models result from specific interpretive questions: one is concerned with the sequence of construction of the cists and primary barrow, and a second considers whether the disarticulated human remains had been curated prior to deposition. The model preferred by Bayliss et al (2007a) is presented here (Fig. 8.2) but a summary of each of the alternative models will be included for completeness.

![Preferred model for the chronological sequence at Ascott-under-Wychwood (Bayliss et al 2007a, Fig. 3)](image)

*Figure 8.2* Preferred model for the chronological sequence at Ascott-under-Wychwood (Bayliss et al 2007a, Fig. 3)

Activity at Ascott-under-Wychwood began before the construction of the earthen long barrow. Evidence of these occupations is in the form of a large selection of flints dating to the 8\(^{th}\) millennium cal. BC and a smaller collection dated to the 5\(^{th}\) millennium cal. BC. These later Mesolithic flints may represent several events
contemporary with two roe deer bones that date to the early 5th millennium cal. BC and two fragments of beech charcoal, from a posthole, which produced dates from the last quarter of the 5th millennium cal. BC (F16 see Fig. 8.5). Further pre-barrow activity occurred in the first quarter of the 4th millennium cal. BC and seems to consist of a number of separate, discrete episodes of activity.

Occupation features found beneath the barrow include an extensive area of midden material, small pits, hearths and two small timber post structures. Finds from these features included pottery, flint tools, axe fragments, animal bones and stone querns. A sample taken from pit F7 and six samples from the midden material all returned dates in the 39th and 40th centuries cal. BC. The temporal proximity of these dates (Fig. 8.3) suggests that the midden itself may have been formed over a short period of time, probably a few decades (Bayliss et al 2007a, 33). Whilst this could have been a single occupational event it is perhaps more likely to represent a series of associated events.
Figure 8.3 Distribution of dates relating to the Neolithic pre-barrow occupation (Bayliss et al 2007a, Fig. 5)

Neolithic activity pre-dating the primary barrow is likely to have ended between 3940 – 3765 cal. BC (Bayliss et al 2007a). Environmental analysis suggests that a sufficient gap occurred between the earliest Neolithic activity and the primary barrow to allow a turf line to form. The preferred Bayesian sequence suggests a gap of at least 50 years in later 39th century and the early 38th century cal. BC (Bayliss et al 2007a, 36). It is at this point in the narrative that an alternative model has been proposed (see below). In the model preferred by Bayliss et al (2007a) the cists and primary barrow are thought to have been constructed at the same time. The dates from human bone found in the cists would therefore post-date the construction of the primary barrow.

Within the preferred model, material from the primary barrow dates its construction to 3760 – 3695 cal. BC and Bayesian analysis of the radiocarbon dates suggests that
mortuary practices occurred over a relatively short time; from shortly after the construction of the barrow (3755 – 3690 cal. BC) until the last remains were interred in 3645 – 3580 cal. BC (Bayliss et al 2007a, 33-37). The dated samples also indicate that burial initially took place in the two cists then began in the passages in the mid-37th century cal. BC (Bayliss et al 2007a, 37).

Samples from four hearths (F50) found in a linear spread below the eastern end of the secondary barrow were dated to the 38th century cal BC (Fig 8.3) and may be contemporary with the construction of the barrow or its primary use (Bayliss et al 2007a, 33). The barrow extension must postdate these hearths and when taken together with dated samples from the extension material, date the construction of the secondary barrow to 3745 – 3670 cal. BC. This was possibly no more than 25 years (68% probability), and almost certainly less than 55 years after the primary barrow was built (Bayliss et al 2007a, 36). Allowing for the possibility that the latest dated sample was not from the last individual interred in the monument it was calculated that the primary Neolithic use of the monument lasted between 60 -160 years (Bayliss et al 2007a, 35).
8.1.3 An alternative interpretation

The alternative model considers the possibility that the cists were constructed first and were free-standing for a period of time prior to the construction of the first barrow, at least long enough for the turf line to form around them (McFadyen 2006; Bayliss et al. 2007a, 38). This alternative model firmly places the beginning of Neolithic occupation in the 39th century BC rather than the 40th and suggests it to have ended in 3640 – 3540 cal. BC. Rather than a minimum of 50 years between the end of the Neolithic occupation and the first burial this alternative model suggests a maximum of 50 years for this hiatus. The first bodies are suggested to have been interred in 3815 – 3695 cal. BC with the primary barrow not constructed until 3745 – 3670 cal. BC (Bayliss et al. 2007a, 39).

Figure 8.4 Length in calendar years of different phases of construction, use and absence (Bayliss et al 2007, Fig. 9)

The closer proximity of occupation activity and construction could suggest a more continuous sequence of activity than that in the preferred model. Importantly for the discussions presented later in this chapter this model argues for more continuity between occupation events, the midden and cists. Rather than an extended gap in
activity this continuity might suggest shared practices of construction, accumulation and understandings of materials (McFadyen 2006). It is possible that those who took part in midden activities were present when the cists were constructed. This is a particularly salient point as it draws interpretations away from ideas of distant ancestors to those who were known and remembered.

8.2 Material and action: Construction and place

In both Mesolithic and Neolithic archaeology landscape based studies have been used to discuss practice and the creation of place (e.g. Edmonds 1999; Cummings 2000; Whittle and Cummings 2004; Conneller et al 2009; Conneller 2010; Milner 2010). These approaches have shifted archaeology away from static models of landscape that presented a neutral environmental backdrop populated by specific resource locations and task sites shown as if they were contemporary (e.g. Clark 1972, Donahue and Lovis 2006). Instead a sense of social practice, memory, temporality and mobility has been injected into these discussions, leading to narratives of encultured landscapes rich with history and myth.

The dispersal of practice across the landscape and relationships between place and processes of construction have been discussed in studies of Mesolithic mobility (e.g. Conneller and Schalda-Hall 2003). McFadyen (2008a; 2010) has suggested that sites within a landscape should be seen as an assemblage of activities that extend elsewhere; as ‘fragments of disturbed practice’ (McFadyen 2008a, 131) across the landscape. Rather than place-bound and concentrated at central sites, McFadyen argues that activities are not seen as isolated but understood to be connected to
practices elsewhere, future events, previous activity and tasks, and other things such as animals, materials, woodlands and people.

McFadyen (2008a) argues that landscape was dynamic and actively made as people engaged with their surroundings. In previous work (McInnes 2009) I have illustrated this using the example of a hearth highlighting its connections to activities within the woodland, knowledge of areas of tree fall, the production and use of stone tools, the felling of trees, the burning of wood, to activities it enables, such as cooking and flint working, and the social interactions involved in all of these. All of these tasks extend beyond the physical hearth and create a network or web of relationships with materials and people across the landscape. This approach to practice and landscape echoes thoughts of Colin Richards (1996; 2004a; 2004b) regarding the social processes involved in the construction of structures and monuments. Rather than the final form, Richards has emphasised the importance of wider practices and activities that brought together people and materials in a particular place creating a web of interpersonal relationships, not only between people, but between people and the world.

Richards has also discussed the movement of stone and the temporal aspect this adds to our understanding of stone monuments (2004b). In a similar manner McFadyen (2008a) has suggested that a consideration of tasks across the landscape can aid in studying the temporality of construction through moments and events of building, processes of assemblage and the movements of people and materials. McFadyen (2006a, b; 2008b) argues that architecture should be thought of as practice not object,
allowing structures and monuments to be studied as part of connected landscapes. Architecture also represents a trace of past activities and past people that influences future conduct in the spaces it creates (e.g. Jones 2003; Harris 2010). This could perhaps be discussed in terms of ongoing processes of construction, assemblage and alteration, with tasks extending its reach to different places, people, and times within the wider landscape. Thinking about the tasks and practices involved in ongoing processes of construction also provides an avenue for considering engagements with materials and cosmologies.

8.3 Pre-Barrow Environment

The earliest evidence recovered from Ascott-under-Wychwood was a large assemblage of flints (Fig. 8.5). Although the majority were not from stratified contexts, a tree-throw pit (F11) did contain stratified material. The feature contained two fill deposits capped by the pre-barrow soil, which was in turn covered by a turf line (C. Evans et al 2007, 57). It is likely that the first tree-fall would have created a distinctive area within the woodland with distinctively different vegetation subsequently growing in the clearing it created. It has been suggested that the two fill deposits within the feature indicate two episodes of tree growth and falling (Evans et al 1999). A second tree would have stood alone within a clearing in this distinctive area (C. Evans et al 2007, 75) and would have been understood in relation to this specific woodland clearing context.

Examination of the sequence within the tree-throw pit has provided a detailed picture of changes in the environment over the long-term prior to the construction of the
barrow. Analysis of samples from the two fill deposits of the pit indicate a succession during the Mesolithic from less to more open woodland with the later fill including a more varied range of faunal species (C. Evans et al 2007, 76). The soil horizon overlying the two fill deposits and extending under the western end of the barrow has been interpreted as open grassland with some evidence for light tillage. Within the charcoal samples from the buried soil hazel, ash, elm, oak, hawthorn-type and birch were identified, which is consistent with an environment of woodland and scrub (Limbrey 2007, 73). These strands of evidence suggest that the late Mesolithic and early Neolithic environment would have been one of woodland with clearances and more open areas.
Figure 8.5 Plan of pre-barrow Mesolithic flints, post-hole feature F 16 and tree-throw F11. (after McFadyen et al 2007, 26-36).
8.4 Mesolithic Deposits

The flint assemblage recovered from Ascott-under-Wychwood included pieces from both the early and late Mesolithic found within pre-barrow features, the buried soil and the barrow itself (Fig. 8.5). The Mesolithic flint recovered from Neolithic soils or features is discussed further below but it is noted here that little of the Mesolithic assemblage was recovered from its original context. Only those found within the tree-throw (F11) were stratigraphically secure in separate deposits dated to the 8th millennium cal BC and 5th millennium cal BC. As discussed above (8.1) two roe deer bones and charcoal from posthole F16 have produced dates that fall in the late Mesolithic (Bayliss et al 2007a, 31).

Among the assemblage of 112 microliths early Mesolithic forms dominated suggesting a more extensive occupation of the site in that period. In contrast activity at the site in the 5th millennium cal BC is likely to have comprised of several shorter visits (Cramp 2007, 294). Although little of the Mesolithic flint assemblage was in situ it is still possible to gleam insights into how flint was understood. The majority of the flints recovered from the tree-throw feature were in fresh condition, indicating they had been deposited soon after production (Cramp 2007, 297). The assemblage was dominated by blades and bladelike flakes with a single bladelet core. A probable tranchet axe sharpening flake with silica gloss along the blade edge is suggested to have been used for wood-working activities and a ‘piercing’ tool featured heavy use wear (Cramp 2007, 284).
Activities such as microlith manufacture, as testified by the presence of microburins, and the production of knives and blades can be suggested from the flint assemblage alongside wood-working and butchery of animals (Cramp 2007, 292). As already mentioned (chapter four) the use of trees as natural architecture for camp sites, small groups of tents, shelter or shade, or as a place to hang food away from scavengers (Warren 2005, 67) extends the range of practices a tree, tree-throw pit and post might have been involved in. Broader connections to flint sources, procurement activities, hunting practices and the people and places involved may have extended this place into the wider landscape. These different activities and practices may have created a place with layered histories and meanings within a distinctive clearing that was understood through shared and changing cosmologies.

The clearing created by the tree fall that formed the throw-pit, the fallen tree itself and the distinctive vegetation that would have defined such an area would have been distinctive within the wider environment. As described previously (Chapter four) trees in many cultural situations are considered animate and alive. Their longevity, capable of living for hundreds of years, may have facilitated their role as a landmark within woodland. Following a tree-fall a sole tree growing in its stead within this distinctive area may have become more significant. All but one of the flints recovered from the tree-throw were heavily corticated and the distinctive layer on these pieces may have contributed to their understanding and deposition. Cortex is often referred to as ‘skin’ in technical studies of lithic assemblages (e.g. Sieveking et al 1972; Jacobi 2006) and the concept of a covering layer may have been a property that required the flint material to be deposited and contained within the hollow. This act of
deposition is unlikely to have been solely related to the flint itself but perhaps involved characteristics of the woodlands or distinctive area of tree-fall, and the identity of the group or person involved in knapping activities or use of the pieces.

At Ascott-under-Wychwood the properties of stone, trees and earth were all part of activities and contributed to how each material, and the flint assemblage produced, was understood. Knowledge of each of these materials drawn from cosmological schemes would guide understandings of material interactions between flint, people, trees and earth and be (re)created within these practices. The intermingling of materials and complex ways in which these interactions were understood resulted in the deposition of heavily corticated pieces of flint in the tree-throw feature. This highlights that to consider a material in isolation simplifies practice in a way that divorces it from the broader context in which actions occurred.

Apart from those securely stratified within the tree-throw feature the Mesolithic flint recovered from pre-barrow contexts shares a distribution with that of the early Neolithic material suggesting that much of the Mesolithic assemblage was re-deposited during later activity (Cramp 2007, 307). The implications of encounters with past materials in the earliest Neolithic may have served to both establish and reinforce a sense of place and significance as tangible pieces of history and the past.
8.5 Early-Neolithic Activity

Activity in the early 4th millennium cal. BC is unlikely to have been a single episode of occupation lasting decades. Instead it seems that several occupational events occurred (Whittle et al 2007, 328). Activities that can be identified include pit digging, flint knapping, hunting and butchering of wild animals, and herding of domesticated animals. Faunal remains indicate the presence of cattle, sheep and pig, and tools recovered reflect a broad range of tasks including scraping, cutting, piercing, archery, antler working, and flint knapping (Reynolds 2010, 146). Limited butchery evidence for domesticated animals has led to the suggestion that cattle were kept for dairy products and lipid analysis of the Carinated bowl pottery has shown the presence of both meat and dairy fats (Copley and Evershed 2007).

Posthole features excavated beneath the barrow have been interpreted as representing two small structures (Fig. 8.6; McFadyen et al, 33). Posthole F10 cut into the tree-throw feature, although there is no direct evidence that in doing so any Mesolithic material was disturbed. Nonetheless it is intriguing to consider a flake of flint being encountered as a hole was dug in the earth, particularly given the lack of natural flint in the area.
Figure 8.6 Plan of Neolithic pre-barrow features with the location of tree-throw F11 and post-hole F16 indicated (After McFadyen et al 2007, Figs. 2.2; 2.3).
8.5.1 Pit deposits

Alongside the structural evidence a number of hearths and pits were found. Between the two structures a hearth (F48) pit (F7) and stake hole (F29) were identified (Fig. 8.6). The hearth contained little burnt material and only a fragment of unburnt cattle scapula and four unburnt flint flakes were recovered. In contrast the pit (F7), adjacent to the hearth, had an ashy fill which contained cremated and un-cremated pig bone, 68 struck flints (burnt and unburnt), fragments of burnt stone, lumps of clay, and 62 sherds of un-burnt pottery drawn from at least 8 different vessels (McFadyen et al 2007, 31). The deposition of accumulated occupational debris in pits has been discussed in relation to cycles of occupation by Garrow et al (2005, 152) and Pollard (2000b). Pollard (2000b) suggests that the burial of material culture formed part of the process of abandoning a site, acting to close activity.

Whilst other pits associated with this phase of activity did contain similar material none contained such a range in both burnt and unburnt conditions. Pit F14 for example contained 14 struck flints representing various stages of knapping activities, two of these flints were burnt. An unidentified fragment of bone and fossil were the only other finds recovered (McFadyen et al 2007, 31). This collection is intriguing in terms of the interactions that may have occurred it is not a parallel for the deposit in pit F7. If, as seems likely, occupation in this phase was characterised by several short episodes and pit deposits were an act of closing, it would suggest that the material deposited in pit F7 was related to a period of more dense activity than seen in other pits. It may instead be the case that the practice of depositing material in pits occurred
as part of ongoing activities (Garrow et al 2005, 152). In the case of pit F7 its proximity to a hearth (F48), which contained no burnt material, and position between two timber structures might encourage an interpretation that connects these features and the activities centered on that area. The biography, interactions and transformations specific to the material of the deposit may provide insight into the practices an understandings through which the assemblage came together.

Figure 8.7 Plan of Neolithic pre-barrow structures (McFadyen et al 2007, 27).
The flint material recovered from this feature was dominated by heavily corticated pieces the majority of which were burnt in a uniform manner suggesting this occurred at one event (Cramp 2007, 301). The assemblage consists largely of burnt flakes but also includes a scraper (unburnt), a single microlith, and a flake from a polished axe (unburnt). Cramp describes the burnt flakes as ‘in exceptionally fresh condition’ (Cramp 2007, 301) arguing against any suggestion that the material formed part of surface debris or a midden. The heat-affected flakes would have been suitable for reduction and use and the lack of a natural flint source in the area suggests that the deposition of these pieces was not casual or accidental. The transformation of these flakes would involve processes similar to those discussed in relation to harths at March Hill (Chapter five). Skilled manipulation of a fire would be required to manage the hazardous interaction between stone and flame. Although the flakes were useable it would seem that the transformation of the material was central to the activity and their deposition.

The material assemblage in pit F7 featured a number of transformed materials; animal bodies, fragments of stone, and clay had all been exposed to fire. McFadyen et al (2007, 33-50) noted that all burnt material including, burnt flint, burnt bone, and fired clay, was deposited in a careful manner at the site. As discussed in section 5.4 burnt material is unlikely to be conceptualised in the same way as its parent material. The careful deposition of burnt material identified at the site might reflect an understanding of its altered properties and the transformative processes brought about through interactions between people and fire. Pit F7 however, also contained unburnt pig bone, lumps of clay, and unburnt flint negating any interpretation of the
depositional activity as centred on fire-transformed materials. Thomas (2000, 79-80) has suggested that the deposition of material in pits linked events and locations, and acted to materialise shared community history. The burnt material incorporated in the fill of pit F7 would have required different types of fire to bring about the transformations evidenced in the assemblage. It may be that the collection of materials from a number of fires and other activities created a narrative of practices that incorporated different people, events and materials.

This purposeful accumulation, mixing and deposition may have reflected activities, people and places at Ascott-under-Wychwood or elsewhere in the landscape. Their combination will have remade biographies, identities and knowledge of places. However, the materials also offer a narrative of transformation drawing a contrast between burnt and unburnt, clay, bone and flint. Interactions with these different materials, as they were collected and brought together, may have allowed people to make sense of processes of transformation through fire and the decay of materials. A concern with burnt material may have been part of this process in which the altered state and properties of these materials were emphasised through the juxtaposition of burnt and unburnt examples in the deposit. The practices of accumulation represented by the deposits in pit F7 can be examined further through discussion of the extensive spread of midden material that formed beneath the barrow at Ascott-under-Wychwood. Spatial analysis of the midden has been carried out by McFadyen et al (2007) and is drawn upon in the next section to discuss the practices and material interactions involved in the gathering and collecting of midden material.
8.5.2 Midden-making: Materials and Cosmologies

To the west of Structure 1 the buried soil surface featured an area of dark brown loam covering 14 x 11m coincided with dense concentrations of flint, fragmented pottery and animal bone. McFadyen et al (2007, 34 - 50) have interpreted this as midden material and Bayesian modelling has suggested that it formed during the second half of the 40th century, or the 39th century BC (Bayliss et al 2007a, 33), probably during a short period lasting 1 – 75 years (Bayliss et al 2007, 33; Whittle et al 2007, 128). The accumulated material is comparable to that found under the long cairn at nearby Hazleton North (Saville 1990, 14-16; Whittle et al 2007, 128). Analysis of the buried soils under the western part of the barrow agrees with the suggestion that established grassland formed a turf line over the early Neolithic activity (McFadyen 2007, 25). During this hiatus the area of midden would have become overgrown with bracken, grass and herbs (Evans et al 2007, 76).

Within the midden different events or phases of deposition are suggested to exist. A concentration of material culture could be clearly distinguished around each structure suggesting standing timbers as these deposits accumulated. A further distinct concentration was to the east of pit F7 and hearth F48 although it should be noted that a layer of soil formed over these features before the midden material was deposited (McFadyen et al 2007, 34). Further midden deposits were found to be overlying the two structures suggesting that at some point the remaining timbers, now perhaps rotting pieces, were removed or collapsed and the continuation of midden activities formed over any remaining traces. This has interesting implications for the selection of material within the midden.
Three distinct deposits of burnt material, including fired clay, burnt animal bone and burnt flint, could be distinguished within the midden material. The location of these deposits mirrors the areas of concentrated midden material and represents the collection of material similar to pit F7. A concern with the abrasion and decay of pottery, animal bodies, polished stone axes and worked flint was also played out with the deposition of transformed burnt material and its altered properties. By engaging with these remains connections were formed to past people and activities; both those of the distant Mesolithic past and those of remembered events.

The pottery and animal bone found within the midden was weathered and degraded, and appears to have been selected from a location where they had been exposed (McFadyen et al 2007, 34-36). It seems that after fragmentation the material lay elsewhere, unburied, before being collected and deposited in the midden (McFadyen 2007, 34). The process of collection seems to have been careful and considered however; joining sherds of pottery vessels were recovered from the midden as well as conjoins of worked flint (see diagrams by McFadyen et al 2007, 39-46). Furthermore almost all the worked flint found in the pre-barrow phases came from the midden, including flakes from polished stone axes and a large number of microliths from the 8th millennium BC (McFadyen et al 2007, 35).

As mentioned previously the distribution of Mesolithic flint in the pre-barrow soils suggests it had been re-deposited during pre-barrow activities (Cramp 2007, 304). The concentration of Mesolithic flint in the midden (and subsequently in specific
parts of the barrow) suggests deliberate collection of the material which may have implications for how the site was perceived. The unearthing of Mesolithic material would have created an awareness of past activities and use of the site by people. Specific and familiar techniques, movements and actions could perhaps be detected in the marks on the surface of the flint encountered. Here the characteristics that were actively engaged with were the traces of interactions between people and stone in the past. A history and biography of the site was materialised and evidenced to those in the early Neolithic in the lithic assemblage discovered within the buried soil. The collection and deposition of traces of past activity might suggest a concern with actively incorporating the past, via materials, into practices and deposits in the present (McFadyen et al 2007).

Alongside these key processes of transformation and decay the midden represents interaction between the living, activities in which people took part and through which identities and social relations were forged. This should not be lost. The pottery, for example, recalls firing events in which groups would have participated and vibrant transformations would have occurred. Faunal remains may be connected with hunting, hearths, cooking, sharing, conversation and sociability. Burnt material might recall hearths and the home. In this way it is not only concepts of decay and transformation that are articulated within midden deposits but ideas about social groups, material interactions and processes of making. Of activities in which people interact with the material world.
8.6 Conclusions

McFadyen et al (2007) suggest that the midden beneath the barrow at Ascott-under-Wychwood represents practices that brought together different materials, tasks, people and places. An arrowhead made in the flint mine areas of Wessex, for example, would embody the journeys, people and exchanges that featured in its journey to the site (Cramp 2007, 294). However, I would argue that while spatial and historical biographies were part of accumulation practices more can be said of the deliberate gathering and collection of materials at the site. An emphasis on transformation by fire is evidenced in pre-midden deposits by the juxtaposition of burnt and unburnt materials. The hearth that was central to the earliest Neolithic activity contained unburnt bone and flint which stood in contrast to the reddened earth of its structure. Adjacent to this pit F7 similarly brought together burnt and unburnt materials. This accumulation of material in contrasting states does not stand alone from the people, movements and actions of its biography but embodies practices, people and places, transformations and processes. By collecting and gathering materials that tangibly demonstrated change and alteration, concepts of transformation and fire could be apprehended, emphasised and understood.

The selection of materials transformed by fire continued in midden deposits however, other processes were also emphasised. A concern with the past, and processes of decay may also have been central to practices of accumulation and were materialised through the use of key materials. The spatial focus of midden deposits around the remains of two structures would emphasise connections to the past while the rotting wooden posts would demonstrate processes of decay. The selection and inclusion of
weathered and abraded pottery and bone would similarly provide experience of materials undergoing this transformation. Their inclusion in midden deposits may have drawn on concepts of decay and transformation and allowed them to be materialised in a way that enabled people to make sense of these processes.

Incorporating Mesolithic flint material into midden deposits may also have been concerned with making connections to past people and activity. Distinctive microliths might characterise the distant past and unknown people whilst debitage and worked pieces produced by those present would create connections to the group present in the early Neolithic. However, the majority of the flint recovered was fresh and the pieces dating to the early Neolithic were not drawn from exposed spreads of material (Cramp 2007, 296) but produced and rapidly deposited. Their deposition, it seems, did not seek to call upon histories of use. Furthermore, Cramp (2007, 292) comments that much of the flint recovered from the midden could date to either the late Mesolithic or early Neolithic phases of activity. This reflects common techniques and practices which would allow Neolithic groups to recognise worked flint pieces but also allows for ambiguity to be created when material from these different times is brought together.

The spatial focus on areas of previous activity and mixing of old and new flint material may have been a mechanism that enabled the recognition of different times, relationships with the past and changing worldviews. Concepts of time and processes of transformation may have been central ideas that were embodied by the use of key materials in the midden deposits. Through interactions with the materials of these
deposits and experience of the altered properties of materials transformed by fire and time people in the early Neolithic were able to engage with themes that may have been central to new or altered understandings of the world.

This chapter has shown the value of an approach that considers the multitude of materials found at prehistoric sites. The use of properties and cultural qualities as an analytical tool has allowed an examination of the practices evidenced at Ascott-under-Wychwood. The cosmologies and practical knowledge that were drawn upon in the occupation, depositional and middening activities can be argued to emphasise transformation by fire in practices that materialised ideas about the past, present and processes of decay. A similar approach is taken in the next chapter with a detailed consideration of activity at Warren Field, Crathes. This analysis however, will serve as a platform for a discussion of the themes drawn out in all previous chapters.
Chapter 9: Warren Field, Aberdeenshire.

The introduction to this thesis emphasised that materials do not exist in isolation in the world but intersect in different contexts, actions, engagements and practices within the landscape. The previous chapter sought to address the problematic nature of studying individual materials discretely by considering a range of materials at one site. This chapter continues with that same aim drawing together the insights from all previous chapters to discuss the Mesolithic and Neolithic archaeology found at Warren Field (Crathes), Aberdeenshire (Fig. 9.1). This analysis serves as a platform for a discussion of the themes that have arisen from this thesis and reflection on how the application of new ideas about materials and materiality has furthered understanding of elements, cosmologies and the Mesolithic – Neolithic transition in Britain.

The use of materials in and around the Mesolithic pit alignment demonstrates connections between trees, fire and water and the articulation of these materials in a practices that continued for over a century. The relationship between landscape and cosmologies is argued to be materialised at the site in activities that recalled not only the materiality of the world but the construction of society. The re-use of these pits in the earliest Neolithic is not used to argue for a direct link between groups using the site but the continued importance of materials in understanding the past. I do not propose to argue for a connection between the two periods of activity but instead
suggest that the presence of the two features may indicate some presence, of unknown frequency, at the site in the intervening period.

Figure 9.1 Aerial view of Warren Field, Crathes, showing the Mesolithic pit alignment (A) and the early Neolithic timber structure (B), taken in 1976. (© Royal Commission on the Ancient and Historic Monuments of Scotland. Image KC 632)
Activity at Warren Field in the earliest Neolithic was centered on the construction of a timber hall. Detailed examination of the materials used in construction, the architecture of the building and the use of fire at the site allow for a more nuanced interpretation of the site than previously offered. The structure forms part of a regional group of similar sites most comprehensively studied by Brophy (2007). By considering the ideas put forward by Brophy alongside the analysis of the building at Warren Field in this chapter the value of a materials based perspective is demonstrated. Implications for interpretations of this wider groups are also highlighted.
Figure 9.2 Location of the Warren Field site in relation to the River Dee, Burn of Coy, Balbridie Timber Hall and Mesolithic lithic scatters (after Gaffney et al 2013)
Part 1: A Mesolithic pit alignment

At Warren Field, Crathes a Mesolithic pit alignment that extended over 90 m. in length (Fig. 9.1) was identified through aerial photography close to the Burn of Coy and its junction with the River Dee. The line of 17 pits, with some associated post-pits, follows a gravel ridge between two shallow, dry channel beds and is c. 300 m. from the Burn of Coy. A number of further pits were identified c. 40m south-east of the alignment but were not excavated. Those excavated had been dug through compact gravel deposits and varied in size from smaller examples of c. 1 m. in diameter with a surviving depth of 0.55 m., to the largest which was 2.6 m. in diameter with a depth of 1.3 m. (Murray and Murray 2009, 12). During excavation 14 pits were exposed and of these seven were excavated (Fig. 9.3). Radiocarbon dates obtained from a range of fill deposits suggest that the pits of the alignment were not dug concurrently (Table 9.1) and Marshall (2009, 76) suggests that there were at least two episodes of pit digging, estimated to have been between 190 – 370 years apart (68% probability). However this interpretation is based on measurements from only a few of the pits and it may be that more episodes, or more continuous activity occurred.

Charcoal-rich deposits were found at the base of the majority of excavated pits, and alder, hazel, willow/poplar and birch were identified among the fragments. A single carbonised hazelnut shell, and grass seeds were also recovered. While birch and hazel are thought to have grown in the area there was no evidence found that alder or willow/poplar were present in the surrounding woodland (Lancaster 2009). The alder and willow would therefore need to have been brought to the site. This may have
been from as nearby as the Burn of Coy, just 300 m. away (Murray and Murray 2009) and provides hints at gathering activities and the relationship between people and the water. The inclusion of alder and willow/poplar amongst the charcoal and a lack of indicators for natural fires suggests that the charcoal deposits were not of natural origin.

Alongside deposits of charcoal-rich material, each pit also featured a number of layers of silting and material that had slipped into the pits as the upcast soil eroded (Murray and Murray 2009, 13). Many of the charcoal-rich deposits were mixed with or interleaved between these layers as primary fills, but in two pits discrete, compact concentrations of charcoal were deposited at the base in a deliberate manner. None of the charcoal deposits appear to have been deliberately covered up but were instead left exposed. The pits themselves were also not backfilled and would have been visible as hollows with surrounding mounds of soil (Murray and Murray 2009, 25). Recent discussions of the site by Gaffney et al (2013) have also suggested that posts or stakes may have stood in some of the pits. In particular pit five may have held a post and the burned base of a stake was found in pit six.
Figure 9.3 Plan of the section of the pit alignment revealed at Warren Field with section drawings of the excavated pits (after Murray and Murray 2009, Fig. 3.)
<table>
<thead>
<tr>
<th>Laboratory number</th>
<th>Context and sample type</th>
<th>Radiocarbon age BP</th>
<th>Calibrated dates cal BC (95 % confidence)</th>
<th>Posterior density estimate cal BC (95% probability)</th>
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<td></td>
<td>Charcoal; willow/poplar and hazel</td>
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<td>SUERC-10077</td>
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<td>8765 ± 40</td>
<td>7970 - 7610</td>
<td>-</td>
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<td></td>
<td>Charcoal; hazel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Charcoal-rich primary fill pit 19</td>
<td>8755 ± 40</td>
<td>7960 - 7610</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Charcoal; alder/hazel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUERC-10076</td>
<td>Silty primary fill pit 22</td>
<td>8710 ± 40</td>
<td>7940 - 7590</td>
<td>-</td>
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<td></td>
<td>Hazelnut</td>
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<td></td>
<td></td>
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<td>7600 - 7525</td>
<td>7590 - 7510</td>
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<td>7590 - 7480</td>
<td>7590 - 7530</td>
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<td>7260 - 6840</td>
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<td></td>
<td></td>
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<tr>
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<td>8080 ± 35</td>
<td>7180- 6830</td>
<td>-</td>
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<td></td>
<td>Charcoal; birch and hazel</td>
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<tr>
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<td>7080 - 6810</td>
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<td>7080 - 6810</td>
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<tr>
<td>SUERC-12256</td>
<td>Silty primary fill 1 pit 5</td>
<td>7945 ± 40</td>
<td>7040 - 6890</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Charcoal; alder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUERC-12258</td>
<td>Upper fill of eroded material in pit 5</td>
<td>6635 ± 35</td>
<td>5630 - 5400</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Charcoal; oak</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory number</td>
<td>Context and sample type</td>
<td>Radiocarbon age BP</td>
<td>Calibrated dates cal BC (95% confidence)</td>
<td>Posterior density estimate cal BC (95% probability)</td>
</tr>
<tr>
<td>-------------------</td>
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<td>---------------------------------------------------</td>
</tr>
<tr>
<td>SUERC-12251</td>
<td>Charcoal-rich fill re-cut in pit 5 Charcoal oak</td>
<td>5200 ± 35</td>
<td>4160 - 3950</td>
<td>-</td>
</tr>
<tr>
<td>SUERC-12261</td>
<td>Charcoal-rich fill re-cut in pit 5 Charcoal oak</td>
<td>5170 ± 35</td>
<td>4050 - 3810</td>
<td>-</td>
</tr>
<tr>
<td>SUERC-4031</td>
<td>Charcoal-rich fill re-cut in pit 5 Charcoal oak</td>
<td>5025 ± 35</td>
<td>3950 - 3700</td>
<td>-</td>
</tr>
<tr>
<td>SUERC-10074</td>
<td>Final fill of re-cut in pit 22 Wheat</td>
<td>4975 ± 45</td>
<td>3940 - 3650</td>
<td>-</td>
</tr>
<tr>
<td>SUERC-12252</td>
<td>Rabbit burrow Charcoal oak</td>
<td>2245 ± 35</td>
<td>400 - 200</td>
<td>-</td>
</tr>
</tbody>
</table>
9.1 It must be symbolic… and other interpretations

Commenting on the presence of deliberate deposits of charcoal-rich materials in the pits Murray and Murray (2009) suggest a symbolic role for the alignment with the site serving as a focal point to bring groups with different cycles of movement together. Concentrations of activity along the River Dee (Fig. 9.2 and e.g. Fraser 2003; Ballin 2004; Murray and Murray 2005) suggest that the pit alignment did not exist in isolation, but as part of rhythms of movement around the landscape centered on the network of rivers. The position of the pit alignment, set back from the water course at Burn of Coy, is argued by the excavators to have been deliberate allowing the alignment to stand apart from everyday life (Murray and Murray 2009). I would argue that this is problematic in two regards; the argument does not consider seasonal changes in the surrounding environment and the relationship of the site to channels of movement is not addressed. Rather than standing apart from everyday life its position and accessibility from both the Burn of Coy and River Dee might suggest that it was deliberately located near these waterways to tie it into patterns of movement. From the site at Warren Field it is possible to travel North upstream and East or West along the River Dee opening up possibilities for travel, contact, trade and journeys. The rivers and woodlands would not have been simply a backdrop to everyday lives but vital parts of an active material world that was in itself understood through cosmologies.

Pollen evidence suggests the pits were dug in a birch/hazel woodland with an extensive open canopy, allowing a good amount of light to penetrate through to the woodland floor (Lancaster 2009, 19). The raised position of the alignment on a gravel
ridge may have given it a more prominent position, however, during the summer when trees are full of leaves the site would have taken on a hidden quality. As openings in the ground with small mounds of upcast earth beside them the site would be difficult to locate in a wooded environment and it may be that only those who knew its location would be able to easily find the site at this time of year. In autumn or winter months the open woodland may have encouraged participation by a wider group whilst the shared knowledge of the alignment and its location may have served to underline a different group identity in summer months.

This shifting openness may have been understood as a characteristic of the site itself and perhaps one that encouraged its use for specific practices at different times of year. The relationship between woodland and practice may not have simply been one of background but concerned with the properties of trees and metaphors for life and time. Cosmological roles for trees and woodland would have informed understandings of the place, pits and activities carried out at the site. Changes in the trees and woodlands over the course of months or years may have affected or informed the practices that took place.

9.1.1 Time and Place

More recently the excavators, as part of a team led by Vince Gaffney, (see Gaffney et al 2013) have reinterpreted the site as concerned with measuring time through observations of the lunar cycle and solar alignments. The arc of the alignment, varying sizes of pits and position in the landscape in relation to features to the south-east are put forward as components that suggest the alignment forms a calendar
system that is focussed on the mid-winter sunrise. The site chosen for the alignment at Warren Field is argued by Gaffney *et al* to be primarily concerned with this solar observation however, while the view of the sunrise from the alignment does fall between two hills to the south-east (see visualisation in Gaffney *et al* 2013) it is not central within this area or in line with a specific feature in the wide valley or either hillside. If the location of the alignment is determined by the mid-winter sunrise it seems the position at Warren Field would not be the most opportune. Gaffney *et al* (2013) suggest that identification of the site by groups in the Mesolithic was by chance observation perhaps accounting for the less favourable position.

Gaffney *et al* (2013) argue that lunar calendars are ubiquitous in early periods of human history, citing the Babylonians as an example. The shape of the Warren Field pits in plan is suggested to mimic the changing shape of the moon and reflect a secondary calendrical function that allowed the alignment to be used to track lunar phases. The stake found in pit six is suggested to have been a marker used to indicate the current phase. To represent the shape of the moon for decades however, the pits would have to be regularly recut over the period of use. While the radiocarbon dates from the pit alignment are problematic in terms of not being representative of all features they do however, suggest the pits were dug over more than a century. Further dates and statistical modelling would help to clarify this but it is possible that the entire alignment was laid out over an extensive period of time with pits gradually added rather than laid out wholesale. This would seem to limit its usefulness as a calendar, particularly in the earliest stages of its development.
The argument for a calendrical function for the alignment is unconvincing but the study also raises broader issues about the interpretation of the site. The authors assert, correctly, that the importance of the site at a fundamental level is in challenging stereotypes of the Mesolithic. As discussed in chapter two, many long-held stereotypes of a functional, simple and brutal existence for groups in Mesolithic Britain remain in the literature. Gaffney et al (2013) highlight that sites such as Warren Field, along with others including a similar alignment at Thornborough, increasing evidence of built structures from the period, and complex landscapes such as the Vale of Pickering, challenge archaeologists to write new narratives of the period. It is however, problematic that the pit alignment is argued to be a monument of the Mesolithic in the same sense that the term is used in studies of the Neolithic, an academic trend highlighted in chapter two (also see Warren 2007). Gobekli Tepe is cited more than once as a comparable site for Warren Field in terms of date and ‘monumental’ structure. This comparison plasters ideas, concepts and narratives of monumentality on the site without allowing for the specific archaeological context of the site or period. In contrast the approach taken in this thesis, considers materials in detail in terms of their trajectory and archaeological context. The following sections unravel the complex material narrative found at the Warren Field pit alignment before reassembling these threads to discuss the activities we can trace at the alignment and what they might articulate about the cosmological beliefs guiding those practices.

9.2 The Fire and the Charcoal

The study by Gaffney et al (2013) takes as its focus the shape of the pits in plan with little comment about their contents. As shown above (Table 9.1), radiocarbon dates
from the alignment suggest that the pits could have been dug over a few centuries or a much longer period spanning more than a millennium. It is therefore perhaps unsurprising that the form and fills of the pits varied across this time span, for example, evidence of lithic-working activity was found in only one of the excavated pits. Pits five and six both featured stake holes and are adjacent to each other but fall at opposite ends of the chronological range. Pits 18 and 19 are also adjacent and both feature dense, compact deposits of charcoal in their base but no other features distinguish them from other pits (Murray and Murray 2009). Although the majority of excavated pits featured charcoal, or charcoal-rich deposits, variation amongst the form of these deposits attests to different practices occurring. By thinking about this range of activities we may be able to acknowledge and comprehend the complexity of the site.

The majority of deposits of charcoal-rich material were mixed with, or interleaved between, layers of silting and material that had slipped into the pits as the upcast soil eroded (Murray and Murray 2009, 13). In two pits discrete, compact concentrations of charcoal could be identified as having been deliberately deposited at the base. None of the charcoal deposits appear to have been deliberately covered up and none of the pits themselves were backfilled (Murray and Murray 2009, 25). Similar interwoven discrete layers of charcoal and soil were found within a clay-lined pit during excavations at Billown Quarry on the Isle of Man. The clay-lined pit produced a radiocarbon date in the mid-5th millennium BC and was associated with a number of other pits and a Mesolithic flint assemblage (Allen and Gardiner 2002, 147). The charcoal deposits at Billown Quarry are argued to have been deliberately placed even
though interweaved with soil deposits. As such, it is worth considering to what extent the charcoal-rich deposits at Warren Field may have been intentional, particularly as those deposits are cited as key to the interpretation of the site as symbolic (Murray and Murray 2009, 21).

Despite the importance of the charcoal deposits to their interpretation of the alignment the excavators give little space within the excavation report to a consideration of the practices these deposits might represent or how this material may have been understood. The discussions in chapter five highlighted that burnt materials are not simply understood by the properties they display when deposited but by the fire they recollect and the unburnt material they recall. The source and trajectory of burnt materials, as well as the process of their transformation, contribute to their treatment and deposition. If the charcoal deposits are considered in more detail insight can be gained into how burnt material and transformation through fire were understood. It may be that something more specific can be said about the kind of activities that produced them and the shifting properties that would have been experienced as people interacted with fire.

In pit 18 (Fig. 9.4) the position of the concentrated deposit of charcoal suggests that care was taken to gather material from a fire and place it in the pit. At the time the deposit was made the pit had been open for a short time and, although some soil had eroded into the base, the pit was more than half a metre deep. The stratigraphy of the pit suggests that the deposit did not erode into the pit but was introduced from the north side (Murray and Murray 2009, 7). A similar feature was identified at Broom
Hill, Hampshire where a series of pits and a post-built structure dated to the late Mesolithic are thought to be the remains of multiple visits to the site (O’Malley and Jacobi 1978). Pit two at Broom Hill was suggested by the excavators to contain a hearth positioned on a sloping side. However, a re-examination of the site archive by Chatterton (2006, 111) has suggested that rather than an in situ hearth a deposit of burnt material had been tipped in from the edge in a deliberate action.

Figure 9.4 Sections of pits 6, 22, 18 and 19 from the pit alignment at Warren Field, Crathes (after Murray and Murray 2009, 8, Fig. 4)
In the pit at Warren Field the contrast between the clean, sandy gravel of the eroded upcast material and the dark charcoal must have been visually striking. Bringing the two materials into contact will have emphasised both contrasts and similarities, this might include the colour, texture, smell and how the materials stained the skin. The different sources of the materials, one from the ground and one produced by fire, may also have been emphasised by their juxtaposition. In pit 18 a large stone overlays the charcoal deposit, pressing directly into the material. The clean interface between the two suggests they were deposited together. The contrast between the gravels and the charcoal would only have been partially obscured by the stone, and a further contrast, between soil, charcoal and stone, would have been created with both soil and charcoal potentially staining the stone, which itself may have already carried other materials on its surface.

The stone may have been discovered whilst the feature was dug and was perhaps understood through cosmological schemes as the remains of past activities carried out by people or other beings. At Uluru, boulders are recognised as sleeping old men and many rocks and features in the landscape are understood as the traces of past actions by ancestors and totemic heroes in the Dreamtime (Taçon 1991; David and Wilson 2002; Reynolds 2010). If stones can be considered ancestral or the remnants of past activities by spirits, the deposition of material transformed by activities involving the living, with material that represents spiritual beings, may have explicitly drawn a connection between different times and activities. The slow reburial of the charcoal and stone in pit 18 by eroding material may have been recognised as part of similar
processes to those that took place in the past. The deposits and the pit alignment itself materialised connections known through beliefs and may have become a place where people came to carry out activities that recreated or reinforced links to past peoples and at the same time emphasised group identity through shared practices.

Pit 19 (Fig. 9.4) may be contemporary with pit 18 and features a concentrated charcoal deposit within which blackened pebbles were found. The deposit was placed immediately after the pit was dug in the crevice between two glacial boulders that formed the base of this pit before any erosion occurred). The boulders may have been understood in a similar way to the stone found in pit 18: related to the construction of the world, as the traces of spirits or ancestors and their actions. The discrete deposit of charcoal must have been placed by hand, requiring a person to climb into the pit in an intimate act that connected people, fire, stone, water transformation and, perhaps, the past and its peoples.

The blackened pebbles within the charcoal deposit are unlikely to be an accidental inclusion and they do not feature in any other deposit. The pebbles may have been collected from the Burn of Coy just 300m away. In chapter five I discussed the transformation of beach pebbles by fire during activities at Cnoc Coig, Oronsay. The distinct forms of deposition at that site suggested recognition of different phases of transformation by fire through the changing properties of the stones. At Cnoc Coig pebbles fresh from the shore may have been wet, shiny, smooth and salty. I have suggested that as fire dried, cracked and split the pebbles during activities and they began to display properties such as warmth, they were understood to be gaining fiery
properties and losing those of the sea, or water. At Warren Field pebbles collected from the stream are likely to have held similar watery properties of smoothness and dampness which would have been obscured or changed by fire into properties such as warmth. The distinct properties of these water-worn stones and their source in the water have meant they were understood in a different way to the stone found in pit 18. Their deposition within the charcoal suggests they were understood in a similar way to that material with the burnt, transformed quality, evidenced perhaps by colour and smell, over-riding differences in weight and texture. However, it should perhaps be noted that they are the only pebbles recovered from the alignment and were deposited in a feature whose base was formed by two boulders. Alongside statements about the relationship between water and fire, and transformations between the two, there may also be recognition of the stony character of these pebbles and their similarity to boulders in the ground despite their watery origin. Rather than one particular kind of property or quality the emphasis at Warren Field may have been on deposits that embodied different key elemental materials.

In pits 18 and 19 contrasts and connections are being drawn between stone, water, soil and fire in practices that also drew articulated movements between this area of woodlands, the nearby stream, rivers and other features in the landscape. It should not be forgotten that the pebbles may further express movement and may have been transformed and used in activities elsewhere. Of the features excavated within the alignment, only these two received concentrated, deliberate charcoal deposits and only these two pits featured significant pieces of stone within their fill. Charcoal-rich material was however, found in both distinct layers and mixed into the eroded soil
from the upcast material in a number of pits (e.g. layers 22/3 and 22/6 in pit 22, Fig. 9.4). The presence of charcoal in the eroded material has been suggested to indicate fires were lit on the upcast material surrounding the pits (Murray and Murray 2009). However, it may be that charcoal was purposefully interspersed with the soil in and around the pit. The mixing of charcoal and soil would both contrast and diffuse differences between the two materials and may have been a deliberate attempt to transform both through their combination. This echoes the deliberate acts seen in pits 18 and 19 both in terms of the deposition of burnt materials, perhaps embodying fire and processes of transformation, and the combination and juxtaposition of different materials. Understanding of elemental materials, those key to the origin and construction of the world, would be recalled and recreated in practices that dealt in the mixing and transformation of materials that were drawn from distinct parts of the landscape.

9.3 The Colour and the Light: The Rock, The Tree and the Fire

Chemical analysis of samples from some of the pit fills offers more detail of the activities carried out at the site and the materials involved. Fragments of crushed rock were identified within the matrix of the eroded material and in some, but not all, charcoal deposits. The chemical signature of the rock can only be matched to stone found at a highly visible landmark c. 40 km. from the site. The connected nature of the pit alignment with the broader landscape is again suggested. The distinctive stone in this area includes vivid purples and greens and the excavators suggest that the stone was being used to make pigment (Murray and Murray 2009, 22). There is evidence of pigment production by Mesolithic groups elsewhere. Work by K. Hardy
(2009) on bevel-ended tools from the rock shelter at Sand, Scotland, highlighted the strong possibility that those objects were used in the exploitation of minerals for the production of pigments during the Mesolithic, and there is evidence of pigment production using copper at the Mesolithic settlement at Howick (Waddington 2007). The presence of this crushed rock in charcoal deposits in particular suggests that fire may have been used as part of processes that created pigment. When heated, a pigment can change colour and the addition of charcoal to pigment can further alter the colour of the resultant paint (Tairov and Bushmakin 2002). The addition of small or crushed fragments of rock to a fire would also have altered the colour and nature of the flames, perhaps contributing to how both the stone and fire were understood and resulting in the need for specific treatment of the burnt remains.

Alder was also identified amongst the charcoal of several of the pits sampled. The tree is often coppiced for its flexible timber and is a good firewood burning at particularly high temperatures, but only when fully dry. Many parts of the tree can also be used to make dyes of several colours; the bark can be used to make a reddish-brown dye, young shoots dried and ground into a powder will yield a pale yellow-brown dye while the catkins will produce a yellow-green dye (Hamilton and Humphries 2005, 27-30). Alder is an oily wood that is particularly durable underwater (Hamilton and Humphries 2005, 27-30; Mitchell 1978; Johnson 2004). Its preferred habitat at the water’s edge or in wet or swampy ground and it may have been that Alder and water were synonymous: one an indication of the other. This connection and the ability to resist decay underwater may have given the tree a liminal status, connected to both dry and wet realms. The oily texture and smoothness
of wet wood may have been understood as watery properties as much as those of a pebble from a stream. Its form, bark, colour and growth would have alternatively been properties of a tree that becomes dry and still as a wood. Alder burnt at the alignment would have undergone a transformation from a water bound tree to dry firewood and eventually brittle charcoal deposited with soil in the earth. A trajectory from water to fire to earth via fire is repeated.

Further dimensions can be added to this material narrative: Alder timber is white when first cut, then appears to bleed crimson. The apparent blood red colour of the timber may have confirmed and contributed to broader beliefs of trees as alive and analogous to human bodies. In combination with a liminal status and shifting properties, this may have meant the alder was treated with caution and respect as it was used. The use of Alder again points to movements between the water’s edge and the raised ground suggesting that while the site was closely connected to the wider landscape. The fuel benefits of well-dried Alder timber may suggest a temporality to actions within this landscape. The timber may have been felled in one season, perhaps the late winter, then left to dry through the summer. If trees were considered akin to bodies then this period of drying and exposure may have been analogous to the excarnation of human bodies after death and understood to be required for similar transformations to occur.

Drying and burning may not have been the only processes in which parts of Alder trees were used and transformed. Grinding, washing and heating are techniques often used to produce pigment whether from organic sources or stone (Barnett et al 2006)
and would alter the properties of the materials involved. The pit alignment may have provided a forum for the transformation of, and interaction with, materials in practices that produced pigment. The production of pigment, involving a number of transformations and materials, can be a highly charged activity and pigment itself is often considered a potent material. The San communities of southern Africa produced pigment from rocks dug out of particular mountains that held known histories and a specific place within cosmological schemes, giving both the rocks and resultant pigment specific associations. The pigment produced was regarded as powerful and could be used as a medicine or to ward off lightning and hail (How 1962, 34). Pieces of pigment that were deemed to be especially effective or potent were often curated and used by Shamans. The further transformation of pigment into paint was carried out through a series of ritualised practices that reflected the powerful nature of the material and importance of the transformations (Lewis-Williams 1995, 146).

For the San the procurement of the correct material, the production of pigment, its use in varied practices, and its transformation into paint were a series of collective activities that involved different people with a range of skills acting in connected places within the landscape. At Warren Field traces of a coloured stone from a single highly visible location in the landscape, smooth pebbles, use of alder, evidence of fires and pig digging activities all suggest a similar series of activities carried out across the landscape, perhaps by different groups of people. If the production of pigment or paint were considered charged activities for the transformations they brought about the source and movement of those materials around the landscape is likely to have recalled cosmologies.
The rocky landmark may have had a specific history, and the stone, and pigment, may have been understood in a specific way related to this source and the journeys undertaken to procure it. Alder may have been understood in a specific way as a tree body with both watery and woodland properties. The high temperatures it provides when burnt may have been vital for these activities and understood to reflect this amalgam of origins. The rivers that stretched north, east and west would have been known and familiar perhaps associated with cleansing, but may have also been dangerous, leading to far off places and perhaps other realms. Stone and fire may have been the forces through with the transformations occurred, bringing forth a new material. The symbolic aspect of engaging with the earth and creating, in effect, chambers within the earth has also been recognised (C. Fowler 2004b, 91) and may have contributed to traces of the processes being placed in the earth, sometimes mixed with soil or sealed by a stone. In a similar manner to the action of water, mixing the residues of transformation with soil may also have diffused their potency.

As mentioned above the use of pigment is seen elsewhere in the Mesolithic. The use of red ochre, a natural pigment, is widely attested throughout Mesolithic Europe and its deployment in burial contexts has often suggested that it was a particularly powerful material. Structure 24 at the cemetery of Skateholm II, for example, was surrounded by a thick coloured band made up of successive deposits of red ochre (Larrsson 1988; Strassburg 2000, 249). There is extensive use of pigment at the settlement of Lepinski Vir, alongside the direct use of fire to colour objects and structures (Borić 2002). This example may be significant in relation to the stakeholes
repeatedly cut into material that had eroded into pits five and six (e.g. see pit 6, Fig. 9.4). These stakes may have been decorated with paint or charcoal or charred with fire as part of practices produced pigment and paint, and perhaps marked the alignment.

In pit five the last of these small recut features (5/12, 5/19, 5/21) was filled with a concentrated deposit of ‘pulverised’ charcoal that included a fragment of an unburnt flint blade and traces of the colourful exotic stone (Murray and Murray 2009, 13). The fine grain of the charcoal might reflect its role in production processes but could also reflect a specific treatment of the charcoal itself. The careful gathering and deposition of this material once again highlights the significance of both the activities at the alignment and the material transformations that occurred.

9.4 Rearranging the world

The drive to create a system to measure time is suggested by Gaffney et al to have been connected to the need to anticipate the seasonal movement of people and animals around the landscape, specifically the arrival of game and the timing of fish runs. These events are argued to have been understood in relation to the moon and sun. While the use of lunar and solar movements to predict resources is not a topic this chapter will further explore the suggestion highlights that the site at Warren Field does not sit in isolation removed from everyday life but part of an active, known material landscape through which people and other beings moved and intersected. It is by considering the different materials evidenced at the site that a more nuanced and contextual narrative can be written.
The activities at Warren Field over decades and centuries brought together materials that were collected from elsewhere in the world in practices that may have, at some point, been about producing pigment. The bringing together of these materials articulated the landscape created by the movements and actions of people and recreated cosmologies, perhaps in ways that echoed the practices of past generations. The traces of past actions in the form of hollows and mounds, and the freshly dug pits may have also emphasised longevity, tradition, and identities, reinforcing the character of this particular space as a place where charged transformations could occur.

As people interacted with the materials involved certain properties and qualities would have been experienced, and their alteration experienced, as they were transformed during the activities that took place. Materials may have made tangible other transformations involving unseen spirits, ancestors or beings. The treatment of these materials would both materialise, and act to recreate, shared knowledge and suggests something of how the processes themselves were understood. Charcoal was often mixed with soil and at time encounters with stone demanded deposits of fresh charcoal. As a living force that enabled activity and powerful transformations the remains of fire may have been a potent material wherever produced. Those deposits laced with distinct stone from a specific source may have been especially powerful.

The radiocarbon dates obtained from the primary fills of the pits suggest that the site at Warren Field was the focus of activities that gradually created and reworked the
alignment over a long period of time. The hollows and small mounds of soil that would be apparent to those encountering the site may have been understood in a similar way to other landscape features: as the traces of spirits or past people and their activities. These physical features in the landscape may have encouraged the use of the site for practices that transformed a range of materials that may have been understood to be charged with power or connected to other realms. Connections between the past and the living may have been called upon, and further created, through the deposition of burnt material. The crucial processes of transformation at the centre of these practices may have been understood to be mediated by an engagement with fire and people that brought forth specific properties of fire, such as the ability to alter other materials.

The pit digging activity by Mesolithic groups seems to have ceased by the end of the 7th millennium BC although the hollows of the pits would remain visible within the woodland and activities may have continued on the upcast soil and around the feature. In the first quarter of the 4th millennium BC, small recuts were made into pits that were almost full, but would still have been visible. The recut features were filled with silty material that has been suggested to have washed in from the surrounding soils (Lancaster 2009). Charcoal was present in these fills but only tiny fragments were found in most of the pits. Small pieces of oak charcoal, two burnt grains and tiny fragments of burnt bone were recovered, but could also have been washed into the pit (Murray and Murray 2009). In one pit (five) however, a chunk of burnt flint and a burnt stone had been deposited and are likely to represent a deliberate action. It
may be that this deposit was made at the same time as the timber structure discussed below was in use.

Within the Neolithic timber structure deliberate deposits were suggested to have been placed in the axial pits and in two smaller pits. The material deposited in these features included unburnt and burnt flint, burnt grains, burnt pitch stone, a burnt wooden bowl, burnt bone, hazelnuts, pottery, charred hawthorn leaf buds (Murray et al 2009, 41). While some of the material in the axial pits may relate to the destruction of the building, the deliberate deposition of burnt bone, flint and grain can be identified. The deposition of burnt materials within pit five of the alignment may represent the materialisation of a connection between Neolithic groups and the traces of Mesolithic activity. Whether this is a connection being forged or one believed to be long-standing is for debate but either would demonstrate a recognition of past peoples in the landscape.

The relationship between materials, landscape and cosmologies is evident at Warren Field not only in the gathering of materials at the alignment but in the interpretation by archaeologists. Where Gaffney et al (2013) saw a direct correlation with landmarks to the south I have argued that the materials used were drawn from key aspects of the landscape: potent stone from a rocky outcrop, water from nearby waterways, stone and earth from under the ground, wood from the surrounding woodland and, an in-between material, wood that was water and tree. The majority of these were drawn into processes that saw them transformed. The landscape assembled at Warren Field was broken down and reformed with people and fire as the
transforming forces. The landscape and the material world were remade. Cosmologies may not have been actively recalled but implicit in the sourcing, movement transformation and deposition of the materials involved. Care taken with the resultant materials suggests significance of the materials produced and the transformations. Left exposed it seems the materials did not need to be covered only contained.

In chapters four, five and six the variability of trees, wood, fire and water were emphasised and so I do not propose the relationships seen at the pit alignment were universal in the Mesolithic. However, the importance of (the right sort of) trees, water, fire and specific stone can be demonstrated and perhaps suggest their role as elements in the construction of the world and cosmologies. At the site fire appears to be the dominant transforming force in activities brought about by people and this in turn might suggest a fundamental role for fire in bringing about change.

9.5 Timber Halls

A range of timber structures are found in Neolithic Britain including: timber ‘halls’, palisaded enclosures, timber mortuary structures, and post-defined cursus monuments. Part 2 of this chapter discusses the early Neolithic timber hall at Warren Field in detail using the same material approach applied throughout this thesis. The building belongs to a group of timber hall structures identified in eastern lowland Scotland. Brophy (2007) usefully lists and defines those structures that might fall into this regional tradition suggesting that a length to width ratio of 3:1, with a length less than 30m., is common to this group of sites. In plan the internal divisions and large
axial post-holes show strong similarities (Fig. 9.5). In some cases Brophy (2007, 81) suggests that structures may have been built with reference to each other, in particular the buildings at Claish and Balbridie.


As discussed in chapter two the origin of aspects of the Neolithic in Britain, including monuments, pottery styles and ‘houses’ has often been suggested to be found in Europe. Similarly the rectangular shape of the timber halls and other structures in Britain has been compared to longhouses and long mounds in Europe (Bradley 1996).
In particular the interpretation of timber halls as houses belonging to sedentary farming groups has been, in part, inspired by the expectation of finding European style longhouses (e.g. Kinnes 1985; Garton 1991; Fairweather & Ralston 1993). In Ireland a large number of smaller timber structures associated with cereal cultivation have been discovered and often suggested to be dwellings occupied by groups who may have been largely sedentary and had strong social ties to the buildings (Smyth 2013, 306-308). At many of the timber halls, such as Balbridie, and Claish, significant amounts of carbonised grain have been recovered and presented as evidence of a domestic household (e.g. G. Jones 2000; Monk 2000; Rowley-Conwy 2004).

Brophy (2007) has challenged this interpretation highlighting the distinctly non-domestic aspects of the sites in eastern lowland Scotland. The assemblages recovered from the sites do not seem to represent a permanent sedentary agricultural community. At Balbridie a ‘hoard’ of cereal grains were found in post-holes, while, structured deposits has been placed in pits at Claish. Elsewhere Cross (2003) has suggested a symbolic role for the larger timber halls in Ireland, likening them to a causewayed enclosure, as a forum for feasting and gathering. The complex biography of construction of some of the structures in Ireland could also be an indication that they were more than domestic dwellings (e.g. Ballyglass and Ballygalley; Thomas 2004, 123). However, complex patterns of destruction and rebuilding are seen in Neolithic structures of south-eastern and central Europe which are securely interpreted as houses (e.g. Chapman 1999; Souvatzi 2008).
Brophy (2007) questions the interpretation of a symbolic role for the structures in lowland Scotland, arguing instead for a multi-faceted understanding of the buildings. Selecting any one aspect of the archaeology as reflecting the use of the structure, and assigning either domestic or symbolic labels to the buildings would be simplistic and ignore the complexity of the archaeology. Structures may have had multifaceted histories of use involving both dwelling and ritualistic or ceremonial activities. Instead the buildings have been suggested to be communal structures that might have had a variety of uses including, but not exclusively, as a place for feasting, exchange, mortuary rites, storage, gatherings and everyday activities (Barclay 2003; Thomas 2004).

In archaeology, much attention has been focussed on the architecture, organisation, and use of space in houses and how these aspects might reflect cosmological themes (e.g. Hugh-Jones 1979; 1996; Kent 1990; Samson 1990; Parker-Pearson and Richards 1994). Work by Debert (2010; 2013) has attempted this to some degree through the flint assemblages from several British timber halls. The interpretation of the flint material by Debert (2010; 2013) is centred on attachments to place and the creation of memories through knapping activities. Similar processes are suggested to have occurred during the construction of the structure. A further discussion of the architecture of the timber halls is included below. I would argue that more nuanced interpretations can be offered by considering materials in more detail when interpreting these structures.
The process of construction would have involved selecting and felling trees, shaping and treating the posts, transporting the timbers perhaps by river and erecting them in place. Further practices that involved carvings, painting and modifications may have elaborated these structures, both during construction and during use of the building.

The understanding of particular materials within shared worldviews and cosmological schemes would have been articulated through the processes of acquiring and working these materials. In this way I argue that construction of large timber halls may have drawn together groups in the early Neolithic, whether they were partially or fully mobile. Alongside the use of wood, fire, stone, food, pottery and possibly pigment, were encountered in construction, use and destruction of the building. Interactions with these materials would have recreated cosmologies and established social unity by emphasising group identity.

Discussions within this thesis have centered on studying materials and their properties to think about elemental materials in cosmologies. Although the materials studied in chapter four to six were chosen due to their prevalence subsequent case studies have suggested a fundamental role within the world of people in the late Mesolithic and earliest Neolithic. In light of the discussions about trees and wood in chapter four the next section will consider the use of wood in timber halls/buildings. This in turn will feed into interpretations of their destruction by fire. Finally I consider the themes of this thesis in relation to Warren Field, Crathes, Aberdeenshire and the broader group of structures. In particular this will draw on ideas put forward by Brophy (2007) about the development of the timber hall tradition.
9.6 Warren Field (Crathes), Aberdeenshire

The early Neolithic timber structure discovered at Warren Field, Crathes, Aberdeenshire (Fig. 9.1) and lies 600 m. north of the River Dee, less than a kilometre from the timber hall at Balbridie on the south side of the river (Fig. 9.2). The timber structure itself is sub-rectangular in plan and measures 24 m. x 9 m. with several internal partitions marking out a series of different spaces in the building (Fig. 9.6). Posts and planks of oak, willow/Poplar and ash were used in the construction of the building and there was evidence of burning during the construction, use, and destruction of the structure (Murray et al 2009). Tipping et al (2009) have shown that the oak woodland immediately surrounding the timber hall was removed to an extent beyond that which would be required for the construction. Large fields of several hundred metres were established and evidence of cereal cultivation and arable land suggest the land around the hall was heavily cultivated
Figure 9.6 Plan of the timber structure at Warren Field, Crathes showing primary and secondary posts, two axial pits and fire hotspots (after Murray et al 2009).

Radiocarbon dating of charred plant remains and carbonised wood, and Bayesian analysis of the results, show that the building was constructed between $3810 – 3760 \text{ BC}$ (95% probability) and continued in use until $3780 – 3690 \text{ BC}$ (95% probability)
suggesting a period of use of 1 – 90 years (95% probability) but perhaps only 1 – 50 years (68% probability) if a lower level of probability is accepted (Marshall 2009).

This places the structure at the very beginning of the Neolithic in Scotland and is of a similar date to the timber hall at Balbridie, across the river Dee (Bayliss et al 2011, 832- 836). Radiocarbon dating of the site (Table 9.2) produced some results that were distinctly older. Assuming they were samples taken from heartwood, they were dismissed in the original Bayesian analysis (Marshall 2009) but were included by Bayliss et al (2011, 817-8) When re-analysing the radiocarbon dates, albeit noting that they were not from short-lived material.

Figure 9.7 Probability distributions for the dates of early Neolithic timber halls at Crathes (Warren Field), Claish, and Balbridie (Bayliss et al 2011, Fig. 14.174)

While discussing the pre-cairn timber structure at Street House, Loftus, Cleveland, Noble (2006, 89) suggests that a post that produced a particularly early date may have been re-used from elsewhere and formed the focus of construction. In the radiocarbon report by Marshall (2009) all three older dates from Warren Field are reported as being from oak charcoal. As a long-lived tree it would be able to produce an ‘old
wood’ date. Two of the older dates at Warren Field are from posts (43 and 46), which have been identified as oak and were inserted in a secondary phase of construction (Murray et al. 2009, 54 and Appendix 1 in Murray et al. 2009). The third early date comes from a post (3) that was part of the original structure. This post was identified as ash in one section of the report (Murray et al. 2009, 54) and as oak elsewhere (Marshall 2009, 77; Murray et al. 2009, Appendix 1) meaning that it is difficult to consider the specific properties this timber may have held.

It is likely that the sample material that produced the older dates was drawn from heartwood however, it is perhaps worth noting that the possibility remains that the three posts represent timbers from elsewhere that were re-used in the construction of the timber hall. Both these interpretations tell us something of the material being used. Dates related to sampled heartwood can tell us something of the ages of the trees felled, while the possibility of reused materials may suggest something of how trees and wood were understood. Re-used posts would create strong connections to past people and activities and may have been understood as ancestral materials through these associations. The use of these timbers would have physically incorporated the old within new practices.
<table>
<thead>
<tr>
<th>Laboratory number</th>
<th>Context and sample type</th>
<th>Radiocarbon age BP</th>
<th>Calibrated dates cal BC (95% confidence)</th>
<th>Posterior density estimate cal BC (95% probability) (Bayliss et al 2011, 817-8)</th>
<th>Posterior density estimate cal BC (95% probability) (Marshall 2009, 79-80)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUERC-4048</td>
<td>Post 43. Oak charcoal Not external wood?</td>
<td>5235 ± 35</td>
<td>4220 - 3960</td>
<td>4080 - 3965 (73%)</td>
<td>-</td>
</tr>
<tr>
<td>SUERC-4044</td>
<td>Post 3. Oak charcoal Not external wood?</td>
<td>5205 ± 35</td>
<td>4220 - 3950</td>
<td>4060 - 3950 (91%)</td>
<td>-</td>
</tr>
<tr>
<td>SUERC-10088</td>
<td>Post 144. Oak charcoal External Wood</td>
<td>5065 ± 40</td>
<td>3970 - 3770</td>
<td>-</td>
<td>3810 - 3710</td>
</tr>
<tr>
<td>SUERC-4049</td>
<td>Post 46 Not external wood?</td>
<td>5065 ± 35</td>
<td>3960 - 3780</td>
<td>3960 - 3785</td>
<td>-</td>
</tr>
<tr>
<td>SUERC-4042</td>
<td>Destruction fill pit 30 Alder charcoal</td>
<td>5020 ± 35</td>
<td>3950 - 3700</td>
<td>3795 - 3703</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-10085</td>
<td>Upper fill post-pit 89 Wheat</td>
<td>5015 ± 35</td>
<td>3950 - 3700</td>
<td>-</td>
<td>3800 - 3710</td>
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<td>SUERC-10087</td>
<td>Post 144. Oak charcoal External Wood</td>
<td>5010 ± 35</td>
<td>3950 - 3700</td>
<td>-</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-10092</td>
<td>Post 11. Ash charcoal External Wood</td>
<td>5010 ± 35</td>
<td>3950 - 3700</td>
<td>-</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-10094</td>
<td>Infill of post pipe 99 Wheat</td>
<td>5005 ± 35</td>
<td>3950 - 3700</td>
<td>-</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-4030</td>
<td>Infill of post pipe 08 Barley</td>
<td>5005 ± 35</td>
<td>3950 - 3700</td>
<td>3790 - 3705</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-10083</td>
<td>Secondary fill axial pit 50 Hazelnut</td>
<td>4995 ± 35</td>
<td>3940 - 3660</td>
<td>-</td>
<td>3800 - 3710</td>
</tr>
</tbody>
</table>

Table 9.2 Radiocarbon dates from the timber structure at Warren Field, Crathes. (combining data from Marshall 2009, 77; Bayliss et al 2011, 817-819)
<table>
<thead>
<tr>
<th>Laboratory number</th>
<th>Context and sample type</th>
<th>Radiocarbon age BP</th>
<th>Calibrated dates cal BC (95% confidence)</th>
<th>Posterior density estimate cal BC (95% probability) (Bayliss <em>et al</em> 2011, 817-8)</th>
<th>Posterior density estimate cal BC (95% probability) (Marshall 2009, 79-80)</th>
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<tr>
<td>SUERC-4032</td>
<td>Infill of post-pipe 11 Emmer</td>
<td>4990 ± 40</td>
<td>3940 - 3660</td>
<td>3790 - 3765</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-10093</td>
<td>Infill of post pipe 99 Barley</td>
<td>4990 ± 35</td>
<td>3940 - 3660</td>
<td>-</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-4043</td>
<td>Destruction fill pit 30 Alder charcoal</td>
<td>4900 ± 35</td>
<td>3940 - 3660</td>
<td>3790 - 3765</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-0438</td>
<td>Destruction fill pit 30 Bread wheat</td>
<td>4980 ± 35</td>
<td>3940 - 3660</td>
<td>3790 - 3765</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-4039</td>
<td>Destruction fill pit 30 Alder charcoal</td>
<td>4975 ± 35</td>
<td>3910 - 3650</td>
<td>3790 - 3765</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-10084</td>
<td>Post 13. Oak charcoal External Wood</td>
<td>4965 ± 45</td>
<td>3940 - 3640</td>
<td>-</td>
<td>3800 - 3710</td>
</tr>
<tr>
<td>SUERC-4033</td>
<td>Backfill of post-pit 11 Emmer</td>
<td>4950 ± 35</td>
<td>3800 - 3650</td>
<td>3785 - 3695</td>
<td>3790 - 3710</td>
</tr>
<tr>
<td>SUERC-4041</td>
<td>Destruction fill pit 30 Alder/Hazel charcoal</td>
<td>4945 ± 40</td>
<td>3800 - 3640</td>
<td>3790 - 3695</td>
<td>3790 - 3710</td>
</tr>
<tr>
<td>SUERC-4034</td>
<td>Backfill of post-pit 11 Barley</td>
<td>4945 ± 35</td>
<td>3790 - 3650</td>
<td>3785 - 3695</td>
<td>3790 - 3710</td>
</tr>
</tbody>
</table>
9.7 Architecture and Construction

The walls and partitions of the timber hall at Warren Field were constructed of both split and round timbers standing in trenches with larger posts at the ends of most segments. There is an emphasis on the eastern end of the structure, with larger posts and more oak used in this area, and greater attention paid to the alignment of the timbers (Fig. 9.6). The northern end by comparison is quite ephemeral and features more Willow/Poplar. The excavators have interpreted this less robust end as an open area whilst the rest of the structure was roofed (Murray et al 2009, 59). It is interesting to note here the different interpretations of the building at Lockerbie Academy, Dumfries and Galloway (Fig. 9.5). In one there is a separate small building while the other features a more ephemeral end to a single large building, similar to the suggested layout at Warren Field.

At Warren Field the predominant use of different timbers in the two ends of the structure would not only create a difference in the solidity of the architecture but also in the sight and feel of the walls. The different colours and textures of the timbers would have been visible and where planks or split trunks were used further differences between sapwood and heartwood would be apparent. Over decades of use it is likely that posts would decay at different rates, for example, Willow/Poplar would decay more quickly than oak or ash (Mitchell 1978) distinguishing specific parts of the building. The textures of trees alter with age and the remains of posts made from whole and split trunks of different sizes may indicate the deliberate
incorporation of trees of different ages. Different areas would have become more distinct over time.

The incorporation of different types of timber in the building is unlikely to have been casual. Alongside a suggestion that the use of different timbers would distinguish certain posts or parts of the building visually and in terms of texture, it may be that other properties were also important. Ash trees are slender and the timber is strong, flexible and easily split (Mitchell 1978), meaning it is often coppiced to produce long, straight lengths. While Ash will grow on most soils, Willow and Poplar prefer damp woodlands, scrub, hedges, valleys, and ground near rivers or bodies of water (Mitchell 1978; Johnson 2004) perhaps lending the trees and wood a watery characteristic. The trees used in the building at Warren Field may have come from the nearby Burn of Coy or from further into the valley of the River Dee, drawing those parts of the landscape into the architecture. Willow and Poplar are also often coppiced to produce flexible long lengths, and the traditional use of willow for cricket bats is due to its strength and natural shock-resistance (Mitchell 1978; Johnson 2004). This ability to act as a shock absorber is a property it also shares with ash. All three of these woods are light in colour and would have been markedly different to the oak timbers used in the construction.

As flexible, strong and light timbers Ash and Willow/Poplar may have been used elsewhere to construct shelters, traps, fences, weapons and tools. Although they share strength with oak it is unlikely they were understood in the same way. As light, flexible woods they may have embodied youth, health, and vitality. If tree and human
bodies were comparable, the properties that ash, willow and Poplar demonstrate may have been valuable to Neolithic groups where part or whole of the community were mobile for some of the year. Their use in the structure may have called upon these different characteristics to emphasise the adaptability, health and vigour of the group.

The dominant use of oak as a building material seems to be common across the timber halls in the region and suggests that the timber and tree held particular significance, including but not limited to its strength. Drawing on the ethnographic examples discussed in chapter four the use of oak may have drawn on specific properties of oak trees and timber. The size, strength and enduring nature of oak trees for example, may have led to their role as a metaphor for permanence and longevity. As long-lived, enduring features in the landscape they may have been understood as a materialisation of the past and a physical connection to past groups and people. Oak timber is particularly durable and its strong resistance to decay gives it the characteristics of persistence, ongoing life and resilience, properties that may have been important to small communities. At a time of change, oak may have been deliberately employed as a sign of the continuation of communities and long established worldviews, and as a way to establish connections between past and present, old communities and new, and old ways of doing things with new practices and ideas.

9.7.1 Constructing a Community and Materialising Cosmoslogies

If trees and wood were thought to be alive, or powerful metaphors for bodies, each post or timber may have been associated with specific groups or people. This may not
have necessarily meant specific identifiable people but perhaps the idea of a community, and gatherings of people and bodies materialised. The construction of a building was a mutual engagement between people and materials in the creation of a structure that materialised a group and perhaps its cosmological beliefs. The use of important and perhaps elemental materials in these community statements would have emphasised the shared origins of the group and lent specific characteristics to the activities and structure. The use of Oak, Ash and Willow/Poplar may have deliberately drawn on existing Mesolithic understandings of trees and the persistence of Mesolithic communities may have been articulated by the use of elemental materials that were key in existing cosmological schemes. The process of construction may have helped mediate changes and physically incorporate old and new ideas allowing the remaking of worldviews and cosmologies. Alternately Neolithic communities new to the area may have been asserting their cosmologies and beliefs in new places reaffirming their own identity.

Evidence of post replacement suggests that the building was maintained or altered. At the eastern end of the building, for example, three phases of post construction could be identified involving both the direct replacement of posts and insertion of new posts (Marshall et al 2009, 34). These secondary posts changed the architecture of this area closing off many of the possible entrances to the structure. The amount of light inside the building would significantly decrease. The area around pit 30, in particular, would become darker and more closed, perhaps indicating a change in practices or experiences that occurred there, and shifting ideas about who should be present.
These changes in architecture might mark a change in use and in the way the structure was understood and used.

9.7.2 Smoke and Space in a Timber Hall

We can hardly imagine how dark and dreary, stuffy and smoky the experience… it may have been freezing cold, especially on a windy day. In summer… very hot conditions could be mustered. Adding the effects of mesmerising lights, strange smells, incessant chanting and drumming, a trance-friendly environment would have been created, another dimension where convincing visions could emerge from the shadows.

(Strassburg 2000, 251-252)

The burning of timber structures in the earliest Neolithic of Britain, as discussed later in this chapter, has become a defining feature of the transitional period (see Noble 2006; Thomas 2013). However, the role of both fire and smoke in this period should not be dominated by these spectacular destructive events. The way in which the potentially smoky atmosphere of the timber hall at Warren Field was understood may in turn inform our interpretations of these buildings and their destruction. As Strassburg (2000) describes, the timber structure with dividing walls and partitions will have encouraged a distinct sensory experience, particularly with the addition of smoke, heat, sound, drafts, people and shafts of light. The role of smoke in this experience may have veiled activities in secrecy and been vital in understanding both the structure itself and the practices enacted within the walls. Smoke may have demarcated the space within the structure, perhaps marking out appropriate spaces for
certain actions, enabling transformative or dangerous practices, materialising social divides or providing a medium through which other realms could be communicated with. The closing off of the area around pit 30 would have closed this area, the use of smoke here, and elsewhere in the building may have acted as a veil creating secrecy and a sense of the unknown.

9.8 Burning and Destruction

The majority of the structures Brophy (2007) includes in the eastern lowland Scotland tradition were burnt down at least once and have been linked to a broader tradition across Europe where fire is used to destroy buildings (*e.g.* Tringham *et al* 1992; Stevanović 1997; Noble 2006). In some cases in central Europe it has been suggested that accidental fires started during grain processing were responsible for the burning of houses (Bailey 1996, 150-3). However, accidental fires have been largely dismissed as a cause for the destruction of structures in Britain and Ireland (*e.g.* Cross 2003; Whittle 2003; Thomas 2004; Smyth 2013). The timber hall at Claish was burnt down, then rebuilt before being burnt down a second time (Barclay *et al* 2002, 72). As Thomas (2004) suggests, if these were accidental fires this would indicate particular carelessness on the part of the community. In addition, while many of the timber halls in Britain burnt down this did not happen to the majority of the Linearbandkeramik (LBK) houses in central Europe, instead most were abandoned and left to decay (Bradley 1996, 247; Thomas 2004, 124) This suggests that timber halls were not in themselves particularly prone to catching fire and it is unlikely that communities of the earliest Neolithic in Britain were intrinsically more careless than LBK populations.
An experimental firing of a decaying timber, wattle and daub house by Bankoff and Winter (1979) further suggests the accidental destruction of timber structures, particularly timber halls, is unlikely. After letting a hearth burn out of control the building rapidly became engulfed in flames, but this subsided quickly. After twenty minutes the building was smouldering at a temperature cool enough that a person could enter. If the fire were stopped at this stage Bankoff and Winter (1979, 13) suggested that the building could easily be saved and restored. Even when the roof was allowed to catch fire the building remained standing thirty hours after being lit.

To burn a structure as intensely as is seen at timber halls in Britain (e.g. Claish, Barclay et al 2002; Dorstone Hill, Keith Ray pers comm) extra fuel and tending would be required.

A further argument for deliberate burning put forward in relation to examples from Europe is based on the assemblages of material recovered from burnt structures, which do not reflect domestic activity or everyday use of the structure. Instead it has been suggested that the objects were purposefully deposited as part of practices surrounding the intentional burning of houses (Chapman 1999, 116). The assemblages found at timber halls in Britain, including imported materials, large amounts of grain, decorated items and fine pottery, should perhaps not be taken to reflect the use of the structure but rather the practices surrounding its destruction.

Two areas of fire-reddened soil, identified as fire hotspots, and dense deposits of charcoal covering all features suggest that intense burning occurred at the site. Burnt
pottery, flint and grains of wheat were recovered from within the thick charcoal deposits, mirroring assemblages from other timber structures. Whilst the burnt plant material, flints and pottery may be attestable to everyday activity, the widespread and intense burning indicated is more likely to be the result of large-scale deliberate fires. As discussed above, this is not a unique phenomenon within the British or European Neolithic and it seems likely that the structure at Warren Field was deliberately burnt down. The specific material transformations that this destruction would involve and the nature of the fire can be considered through the burnt remains. Using this approach some detail of the event, and the properties that came to the fore, can be considered.

However, the use of fire at Warren Field was not confined to the destruction of the building but can be identified at a number of stages in the life of the structure. Charring at the base of many timbers was identified through the distinctive layer of charcoal within each post-hole. The excavators suggest that these traces of charring were related to the use of fire in the felling process, or the scorching of posts to prevent rot, rather than destruction of the structure (Murray et al 2009). From experimental burnings it is known to be unlikely that the destructive fire would have burnt at a sufficiently high temperature, for a sufficient length of time to burn to the base of the posts (Murray et al 2009).

The timbers of the internal partitions were rarely burnt below the ground surface despite being smaller planks and none of the secondary posts were charred to the base. The amount of charcoal found in post-holes with charring varied in a way not
relative to the size of the post. At the eastern end of the structure, 60% of posts were charred to the base while three split planks were less burned (Murray et al 2009, 57). Insufficient information is available to determine if this difference relates to tree species, however, it may be that a selective emphasis on the longevity of posts is represented by this pattern. Rather than diameter of the posts other properties may have determined how trees were felled and post created. These could include the species of wood being used, how the different structural components were understood, the source of the timber, or perhaps the people who prepared the post.

9.8.1 Lifecycles: Hall, Forest, Trees, People

The dense deposits of charcoal across the site and in the top of all cut features do indicate intense burning at the end of the life of the structure. Two areas of intensely fire-reddened soil have been suggested to be hotspots indicating where the fire began and strongly hinting at a deliberate action. Further indications of deliberate destruction came from two large axial pits identified within the structure (pit 30 and pit 50). The presence of a steep face in the profile of these pits suggests that posts may have stood in them but were removed prior to the destruction of the structure (Murray et al 2009), possibly for re-use elsewhere, as discussed above, but also signalling a deliberate fire for which people prepared the structure. Sealing one of these large axial pits (30) was a thick layer of burnt material including small charred branches of hazel, birch, alder and willow/Poplar. Within the pit, large concentrations of pottery, flint, grain and carbonised fragments of a carved wooden vessel were found and it may be that a fire was set in the pit prior to the overall burning (Murray et al 2009; Tipping et al 2009, 141). Large axial pits with a range of burnt material
were a feature also seen at Balbridie (Ralston 1982; Fairweather and Ralston 1993) and may represent a practice associated with the removal of posts and preparations for burning.

Murray et al (2009, 58) suggest that the small branches of other woods may have been internal decorations or part of a roof. However, it may be that they represent the fuel needed to burn the structure. The destruction of the timber structure at Warren Field would not have been easily achieved and is unlikely to have been accidental. A constant supply of fuel and hours of tending would require the presence of people acting as a group and would create a spectacle, particularly if the burning occurred even partly at night. In a similar manner to the process of construction the practice may have brought the community together through tasks such as collecting branches, the preparation of the building and the maintenance of the fire, as well as observing the spectacle of the fire itself. In this way the event would be similar to activities surrounding the production and firing of pottery and it may be that fire was central to these large gatherings and projects as a transformative force and in encouraging gathering and sociality.

The use of trees as a metaphor for human lifecycles was discussed in chapter four and may have meant that the transformation from tree to timber formed a stage within their lives rather than their death. The use of these timbers in structures and the communal effort involved in their construction may have contributed to an understanding of the building having a lifecycle and biography, perhaps closely linked to the community. The shared history of people, timbers and building would
have led to a specific understanding of the structure for that group. The destruction of houses by fire may have been a practice concerned with the lifecycle of buildings and in the same manner that objects were deposited, broken or burnt in Neolithic Britain, the burning of a structure may have been part of its transformation, death or decommissioning.

The death of those who constructed the building may have meant that the structure could no long be used by the living. If these structures were intimately linked to a group, the death of a key member of the household, and subsequent fracture of the social group, may have signalled the death of the house (Tringham 2005; Whittle 2003, 175). This model has been used to interpret the destruction of buildings more securely identified as houses (e.g. Chapman 1999; Smyth 2006). While timber halls may not have been houses in a domestic sense, the death of a significant figure in the community may have triggered a similar response for a structure associated with a specific social group. Like the decommissioned yew bow the material component of the structure perhaps carried with it the human skill of its creation. The timber posts and the larger construction to which they contributed were the result of interactions between people and trees, the community and the woods, resulting in a structure intimately related to the social group that built and used it.

It is worth here recalling the possibility outlined previously for older timbers to have been used in the structure. Posts may have been understood through the properties of the timber, their place in cosmological schemes and their connections to past people, groups and practices. At both the Street House and Haddenham long barrows, and at
Balbridie across the River Dee, it has been suggested that burnt timbers were salvaged from the remains of wooden structures (Ralston 1982; Noble 2006). The reuse of structural materials is also seen elsewhere in Neolithic Europe (e.g. Bailey 1996, 150; Cessford and Near 2006). At the Vinča site of Opovo, Serbia, it has been suggested that burnt daub fragments were incorporated into new buildings, while at Nea Nikomedeia, Macedonia, new buildings seemed to deliberately incorporate the ruined walls of previous structures (Tringham et al 1992; Souvatzi 2008). The reuse of burnt materials, such as timber or daub, would have allowed past households or ancestral resources to be incorporated into other contexts, including new houses (Chapman 1999, 119-20).

At Warren Field, the two axial posts would have been central and it is intriguing that these were removed prior to the burning of the structure. It may be that these timbers were removed to be reused elsewhere, embodying the events and people at Warren Field. A similar practice may also have occurred at Claish, the burnt timbers at Balbridie were removed from the site (Ralston 1982; Noble 2006) and evidence for the removal of posts has been identified at houses in Ireland (Smyth 2006, 242). Older posts may have been worn smooth, cut marks may have been visible and staining or hints of paint may have been preserved in cracks. These tangible traces may have offered physical reminders of the original building, past people, actions and carvings or treatments of the wood. The incorporation of old materials may have been a visible sign of continuity and a physical renewal of existing communities and cosmologies within new practices.
The use of fire is a specific way to destroy a building that was perhaps understood to have died: the timbers could have been left to decay or the building could have been physically dismantled, undoing the process of construction. The specific properties of fire and the transformations it brings about may have encouraged its use in destroying the building. Burning may have been concerned with cleansing a space considered to be polluted or dangerous. Through both the construction and use of the building, the space and materials may have become charged in such a way that they required purification or destruction to remove them from the realm of the living. If fire itself was considered powerful, perhaps embodying a spirit, then its use, as a powerful force, may have been required to complete this purification or destruction, and perhaps to allow rebirth. These ideas echo those proposed for the burning of woodlands by Mesolithic groups, as discussed in chapter four, and it may be that similar concepts persisted and remained within Neolithic cosmologies. As suggested for the firing of pottery, this practice may represent the use of traditional techniques in a new context acting to both recreate and alter cosmologies.

As mentioned above the sensual experience of a large fire can aid in the creation of memories and the intensity of the spectacle may have emphasised and underlined the event. The excavators of Warren Field estimated that while the position of the structure meant it was visible to those across the valley of the River Dee, the timber structure would not have been visible to those at the site of Balbridie (Murray et al 2009, Fig. 20). However, whilst not inter-visible, the smoke from burning events at either site would be seen by those at the other and in the wider area. As discussed above the smoke may have been understood in specific ways, indicating activity and
a large social event but also perhaps practices to do with purification or communication with other realms. The rising smoke would carry the event to those elsewhere, telling not only of the fire but the activities, people and materials caught up in the practice, and perhaps something of the identity of the social group involved.

9.9 Material engagements and shifting cosmologies

The site at Warren Field lies in close proximity to the Burn of Coy and its junction with the River Dee. Movement between the Mesolithic pit alignment and the water can be seen in the materials found within the features. Alder, a tree that grows at the water’s edge was burnt and water itself may have been required in the production of pigment. Both the timber hall at Warren Field and that at Balbridie are aligned on the River Dee, a pattern that is seen at other timber halls in the region. The structure at Warren Field employs timber drawn from ‘watery’ sources perhaps drawing watery properties and rivers into the building.

Brophy (2007, 90) suggests that the internal layout of timber halls may have embodied ordering principles shared by the community with the similarity in architecture at different sites suggesting shared values. I would argue here that the use of materials is guided by knowledge that articulates cosmological schemes. The timber hall I have suggested was an embodiment of people, present and past, with the lifecycle a common frame of reference between trees, people and buildings. The metaphor of tree equals post equals person can be expanded beyond this simple equivalence.
Ralston (in Barclay et al 2002) suggested that the timber structure would appear like a forest with a roof in an area that had been cleared of ancient woodlands. This association between structure and forest may have involved more than visual similarity. The application of fire when felling trees or preparing posts for Warren Field may have been familiar to groups who regularly interacted with trees and woodlands and had an extensive knowledge of the relationship between fire and timber. In chapter four I suggested that the practice of clearing woodland by fire may have been understood through ideas of purification and rebirth within a cosmology that included animate woodlands, ancestral trees and spiritual beings. The destruction of the timber structure at Warren Field, and at other sites, may have drawn on similar ideas of purification and ancestral trees or timbers.

Rather than a concern with animate beings and spirits however, it seems that the burning at Warren Field was perhaps more concerned with past people and activities. The timbers and structure may have itself become ancestral. The traces of past activities that were evident on the posts and the changing texture of the timbers will have contributed to this understanding. The posts of the structure may have embodied those who were involved in its construction, maintenance and use. Their burning may have been brought about by similar beliefs about lifecycles and the renewal of the world through potent materials. It is interesting to note that in experimental burnings the charred remains of the structures closely resemble the charred remains of woodlands following clearance by fire (Fig. 9.8).
Figure 9.8 Burnt remains of a reconstructed Neolithic Hall at Archaeon, Netherlands.

(1996)
Chapter 10: Conclusion

The burning of the structure at Warren Field will have hugely altered the structural timbers, but there would not be an absence of material following the event. Although less imposing, the charred timbers and extensive amount of charcoal will have continued to mark the space in the immediate aftermath. As new plant growth became established at the site the area would remain distinctive. The growth of vegetation may have been understood as a rebirth or renewal of the community or people associated with the structure, perhaps the next stage in their lifecycle. This again echoes ideas put forth within this thesis regarding the burning of woodlands. The use of fire and smoke may have been required to cleanse or transform powerful material and spaces in both the Mesolithic and Neolithic. Although Warren Field was not rebuilt following its destruction, suggesting that rebirth of the structure was not a focus for the community, this does not necessarily divorce ideas of renewal from understandings of fire and smoke, and it may instead have been the group that was renewed.

Although much of the use of fire seems to show continuity from the Mesolithic to the earliest Neolithic, the new contexts and practices in which it was deployed can offer some hints of changes in cosmological schemes. The application of fire in new ways, for example to harden pottery demonstrates the application of traditional knowledge and an ongoing appreciation of the transformative power of fire. In the case of Warren Field however, it seems that while cleansing attributes may still be called upon, the concept of renewal through fire is not applied to the structure.
groups in the Mesolithic may have understood animate woodlands and spirits to be renewed through purification and burning, the destruction of the structure at Warren Field shows a greater concern perhaps with destruction and ancestral connections. Key timbers were removed from the structure prior to its burning suggesting that those posts left in place were destroyed without a sense of renewal for the people, places and activities they embodied. The care taken to remove the large posts at Warren Field suggests a more central focus for ancestral materials and their continued use, perhaps in a cosmological scheme that did not emphasise renewal and rebirth within the world.

Brophy (2007) has focussed not only on the identification of a regional tradition of timber hall but also on their transformation into later ‘un-roofed’ timber enclosures with a more distinct ceremonial role. This discussion is beyond the remit of this thesis however, it is interesting to note the continued importance of posts and particularly axial posts in the construction of large communal structures whilst the need to conceal has perhaps faded. More specifically this might suggest that the importance of axial posts was not solely due their role in supporting a roof. As the largest, and perhaps oldest timbers in the structure they may have received specific treatment in the form of carving or paint. Central to the building and the spaces within it they may have held key roles in expressing cosmologies and understandings of the world. In this role the axial posts may have represented, or been understood as, trees perhaps suggesting a central role in cosmologies.
The intricate relationship between trees, wood and fire seen at Warren Field highlights a shared central role for these materials in the activities of groups in the earliest Neolithic engaged in the construction of large buildings. These materials are used to articulate an understanding of how the world is constructed and key processes of transformation, decay, renewal and cleansing. The use of fire in spectacular events to produce pottery similarly suggests a key role for fire in changing and creating material things while acts of cremation or cooking demonstrate the ability of fire to transform bodies. Some of these understandings can be seen to be shared with groups in the Mesolithic. Fire is a central feature, in hearths, in woodlands and in cremation able to transform, cleanse, and renew. Fire however, is unstable and complex. Engagements can produce desired properties or be dangerous, risking failure or destruction. Yet it is pervasive despite its changeable quality. This is a feature shared with water. In its different forms water can promote growth, enable life, transport, dissolve, conceal, or destroy, break and shatter. Experience of smoke, fire or water can produce changed bodily experiences and interaction with these requires skilled knowledge.

Although I am drawing comparison between these two forces, differences in how they would be encountered exist. It is likely that water was frequently happened upon throughout the landscape in waterways, puddles, ditch fills, rain, mist, bog and many other places. Fire however, is likely to have been brought about through human action on many occasions. Despite its volatile and dangerous nature it was called forth by the actions of people. Despite this apparent control the care taken with burnt
materials, such as at the Mesolithic pit alignment or on the shell midden at Cnoc Coig, shows reverence for the transformations that took place.

Water also has a temporal rhythm as the sea moves with tides and rivers drop during the summer. Trees and woodlands would have a temporal rhythm seemingly in line with human movement and life cycles. This point touches upon the close relationship I want to argue for between people, trees and woodlands. The use of wood, and interactions with woodlands suggest a social quality with the strength of wood frequently called upon. Trees could be transformed into objects, like the yew bow, that aided in hunting practices. A canoe would allow movement. Wood enabled fire and aided people in controlling the properties of that fire. As an elemental material I would suggest that trees were akin to the position of humans within the cosmologies of groups at this time. Water and fire however, were volatile, changing and at times dangerously potent. They could be transformed but also transform other materials. Specific properties could be brought to the fore but would not persist. I would like to suggest that rather than elemental materials water and fire may have been understood as elemental material forces that could facilitate but were always temporarily engaged with people.

The role in cosmologies for these different materials is not suggested be fixed across the period of transition. Evidence from Warren Field however, does suggest some elements of continuity. The reuse of the location at Warren Field suggests an ongoing emphasis on rivers for movement and perhaps for a directional axis in the world. The shared alignment of hall and river supports this. A focus on woodlands in the
Mesolithic is perhaps echoed in the construction of forest-like structures. The burning of these structures perhaps recalls the cleansing properties of fire. The deposition in pits of potent burnt material suggests secrecy, concealment and diffusion. The burnt remains of the timber hall however, appear to have been left on the surface of the ground at the centre of a large area of fields.

The thesis sought to demonstrate the value of a materials based approach. This has shown that even at sites with an established narrative, *e.g.* Oronsay the tracing of trajectories can provide insight into the beliefs or those involved. Importantly the detail of complex accumulations of material can be unpicked. Transformations, movements and the deposition of material can be linked to construct suggestions of the cultural concepts that were identified through properties that emerged in interactions. This has produced a multifaceted discussion of the materials studied here: wood, fire and water. While they share common properties such as adaptability and prevalence, the different ways in which they were used has suggested that elemental materials may have been understood to play different roles within the foundation of the material world.

Water and Fire are argued to have been understood as forces, bringing about transformation and change, constructing, breaking down, cleansing, containing and enabling. In contrast woodland and trees existed and were transformed. They enabled through their own bodies rather than the transformation of other beings or materials. A woodland could be apprehended as a community, with lifecycles, loss, growth and expansion. Like people, trees were perhaps thought to be building blocks, the material
upon which forces acted. In working with fire, water or wood people drew on cosmological knowledge in a practical way to guide their actions and activities. As materials were brought together the landscape, the material world was articulated through action, as transformations changed materials the reconceptualisation of the residues would again draw on this practical knowledge in its onward journey, be that to the earth, water or air.

In relation to narratives of the Mesolithic – Neolithic transition this material approach has shown a path whereby material from either side can be studied from the same perspective in an attempt to overcome the scholarly divide that has long plagued attempts to produce comprehensive accounts of the period. Elements of continuity can be identified however, it is perhaps easier to see similarity than subtle differences. The challenge for future work would be to expand beyond case study sites to explore the themes discussed here. The shift from a woodland cosmology focussed on the lived world to one that created woodlands could be continued through later types of monument or the diverse range of earlier Neolithic wooden structures. The identification of regional traditions might allow for distinctions to be made in local cosmological beliefs and the elemental materials of which they were made.
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